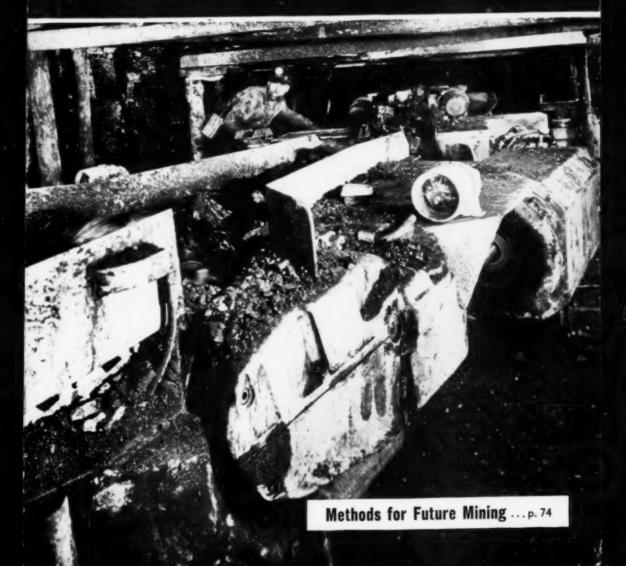
Coal Age





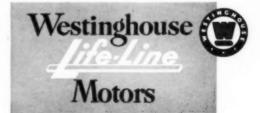
Now . . . for the first time . . . you can install electric motors, or motor-driven machines . . . and forget motor lubrication.

Westinghouse Life-Line . . . industry's amazing, new, all-steel motor . . . now completely eliminates need for lubrication. Life-Line motors are equipped with sealed bearings, pre-lubricated with a more-than-ample supply of specially treated lubricant. Correct lubrication is assured . . . machine outages are reduced . . . motor-drive problems are simplified, since motors can be located without need for constant accessibility.

Added to Life-Line's plate-steel protection,

improved windings and more compact size, pre-lubrication is one more important reason for starting to convert, today, to Life-Line power. Standard ratings available from stock—others on short delivery. Ask your Westinghouse representative for prices and delivery on your requirements, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-21527-A





B. F. Goodrich cord conveyor belt

Gives 2 to 6 times greater impact resistance, troughs better, lasts longer

In the cord plies of a B.F. Goodrich belt each cord is completely surrounded by rubber—no cross threads tie them together. These parallel cords are completely insulated from one another by rubber, free to "give" lengthwise and crosswise when an impact occurs. Thus the rubber can distort temporarily to distribute and absorb shocks that would damage a stiff, unyielding carcass. This augmented impact cushion means better belt service, longer belt life.

Cord belts trough better—Cord belts carry the load with less belt damage, less material "spill." Even thick, narrow cord belts trough naturally. And because they trough better, cord belts keep centered on the idlers, sustain less damage, require less maintenance. Longer centers, higher lifts can be used. Creasing action between idlers (as in a fabric-type belt) is eliminated.

Cord belts last longer, reduce costs

— The better impact cushion of cord
construction resists cuts and gouges. A
transverse cord "breaker" floated above
and across the main cord section helps
cushion impact, keeps the cover from
stretching beyond elastic limits, and
provides better adhesion between cover

and carcass. With each cord completely sealed in rubber, this BFG belt resists the effects of acid materials, moisture, mildew.

Cord belts for tough jobs—If your belts must take severe impact on loading or "over the idlers," cutting and gouging at the loading chure, exposure to moisture and acid materials, heavy loads with long centers and high lifts, you need BFG cord belts. Your local distributor will show you how they can save you money. The B.F. Goodrich Company, Industrial Products Division, Akron, Obio.

B.F. Goodrich

Run!-they switched



Coal Mines switch to HULBURT because HULBURT QUALITY GREASE makes coal mining machinery run SMOOTHER helps keep it PROOF against friction troubles, losses and breakdowns

HULBURT OIL & GREASE COMPANY, PHILADELPHIA, PA.

Specialists in Coal Mine Lubrication

to HULBURT/"



is compounded to do just one job and do it supremely well — i.e. a perfect job of lubricating all coal mining machinery—have you tried it?

IT COSTS NO MORE TO HAVE THIS HAZAPRENE ZBF APP. NO. P-104 BM PROTECTION AT YOUR MINE . .

HAZAPRENE ZBF* SHEATH

Unequalled for Flame-Resistance — standard on all Hazacord Portable Mining Cables

HAZACORD Mining Machine Cables - Fine wires, Hazaloy control or tin-control for corotactica, provide a flexible, easy-to-hundle la. Long-lived, heat-resisting, Performite Insulation er the conductors has an operating temperature of C. This provides a safety margin of about 25% to d overload surges. Huzaprone Allers (not ero used to prevent witking in of molsture h cable ands. Available is Twin-Parallel, Contric or Two Conductor Round Types.

N more and more mines every day, electrical men are turning to Hazacords to gain the extra safety provided by the Hazaprene ZBF Sheath. This basic improvement developed by Hazard in neoprene sheaths has all the qualities important to long cable life - oil, water, acid and heat resistance, good flexibility combined with enduring toughness - plus a resistance to flame never before

And under this Hazaprene ZBF Sheath, you'll find each Hazacord Mining Cable has its individual service-engineered features to assure from every cable component - safe, trouble-free operation. For complete information, ask your Hazard representative or write Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

Flame tests have shown that Zinc Borate imparts greatly increased fire-resistant properties to neoprene compounds with burning rates reduced by as much as 20% and weight losses by as much as 40%. Afterglow is materially reduced also. Millions of feet of cable protected by this type of sheath were used during the war by the Navy for special operating conditions to gain extra fire protection. Hazaprene ZBF Sheaths mean not only greater safety be-cause of unusual flame-resistance and lack of afterglow - but also longer life through increased resistance to abrasion, wear and tear.



TYPE SH-A

HAZACORD Shovel and Dredge Cable —

three separate conductors are individually protected with heat-resisting Keystone insulation and color-coded for quick, lasting identification. They are cabled together with Hazaprene fillers for extra flexibility and moisture tightness. A reinforced double layer Hazaprene ZBF Sheath provides over all protection, and, like all Hazaprene ZBF Sheaths, is pressure cured in a continuous metal mold for

increased density and long life. Available in Types G, W, and Type SH, which has four different styles to best meet voltage pressures and operating conditions.

HAZACORD Flexible Cords (rated at 600 volts) for hand-held mine drills are protected with this tough, durable Hazaprene ZBF Sheath that withstands the most severe service. Hazacord's safety features have earned approval by law for underground mine use. Each is marked with Pennsylvania Dept. of Mines Approval P104 and more than meets their high standard

of flame-resistance. Hazacords are also available in Type SO and SJO to meet every mining need for portable tools, appliances, drop lights, etc.

Visit us at the Coal Show, Cleveland, Booth #115 . . . and see first hand demonstration of the benefits of Nazard's Hazaprene IBF Sheath.



insulated wires and cables for every mining use

obtainable.

Coal A

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CONTENTS . MAY . 1949 Volume 54 Number 5 Methods for Future Mining..... Belt Slope Cuts Colliery Costs..... 78 Keeping Haulageways Dry..... Power Duckbills at Reels Cove 84 The 1949 Coal Show..... A.M.C. Convention Program.... Coal-Show Exhibits..... Praco Ventilation Improvements-THOS. G FEAR and J. H. EDWARDS..... Equipment News 168

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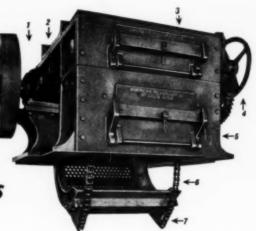


Circulation. COAL AGE, 218 Seath Despitation St. New York 18, New York

A NEW ANGLE TO COAL PREPARATION

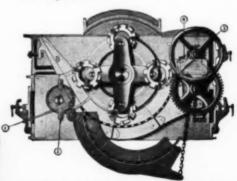
With American
Rolling Ring Crushers

The gains in tonnage underground are too easily offset by obsolete coal preparation at the top, resulting in too small a yield of the most marketable sizes. Control your sizing with the most modern crusher action which splits—instead of crushes—coal. Size control is continuously maintained with a minimum of undesirable fines—and with no oversize. Americans are flexible, with a wide range of reduction, to suit varying market demands.

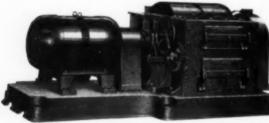


7 OPERATING FEATURES

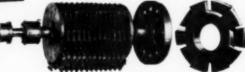
(1) Dust-tight, grease-lubricated, self-aligning pillow blocks with anti-friction bearing. (2) Massive sectional steel frame with dust-tight machined joints. (3) Door to easily cleaned metal trap. (4) Hand-wheel to adjust the position of setting of cage. (5) Inspection door to crushing chamber. (6) Chains to raise and lower cage. Raising cage makes product finer, lowering cage makes product coarser—or cage can be dropped completely as shown. (7) Screen cage with sectional manganese steel side liners.



Rows of shredder rings (below) each with 20 cutting edges revolve freely on their own shafts. Cage prevents oversize, rotor revolves slowly, keeping fines to a minimum.



Americans are available in capacities of 50 to 500 TPH.



Write for "AC Coal Crushing Bulletin."

The Manner

PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1119 Macklind Avenue St. Louis 10, Mo.

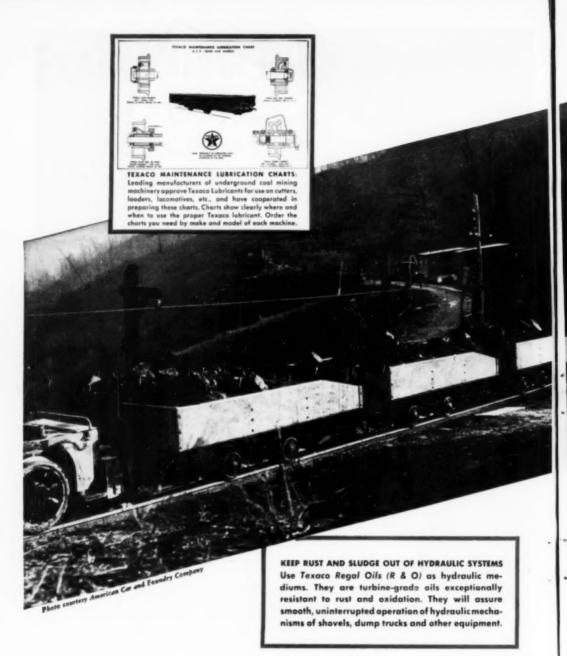
May. 1949 . COAL AGE

Aren't these the SPECIFICATIONS you would set up yourself?

- The BIRD Coal Filter handles large tonnages continu-. Big capacity ously — at least 40 tons of fine coal per hour.
- The BIRD Coal Filter discharges coal as dry as or dryer 2. Efficient water removal than any other means and replaces a series of complex and expensive operations. Average cake moisture is 8 to 10% with ten per cent minus 200 mesh fines.
 - The BIRD Coal Filter delivers a well blended cake suit-3. A uniform product able for feeding to thermal dryers or direct loading.
 - The BIRD Coal Filter permits a closed water system, the 4. A clean filtrate filtrate returning continually to the washing circuit.
 - The BIRD Coal Filter has almost no effect on size from Minimum degradation feed to filter cake. For example, a feed containing 50% plus 10 mesh solids comes out 47% plus 10 mesh solids.
 - Continuous operation for long periods The BIRD Coal Filter runs continuously for months without shutdowns. Maintenance cost is exceedingly low. Operation is entirely automatic.



The BIRD Continuous Centrifugal COAL FILTER



Tune in . . .
TEXACO STAR THEATRE
presents MILTON BERLE
every Wednesday night.
See newspaper for time
and station.



TEXACO LUBRICANTS



KEEP WHEELS ROLLING, TONNAGE MOVING

Assure <u>easier starts</u> and <u>uninterrupted</u> <u>movement</u> by lubricating car wheels with Texaco Olympian Grease

Best way to keep trains rolling and tonnage moving is to give car wheels effective lubrication — Texaco Olympian Grease. This long-lasting lubricant curbs frictional "drag" . . . thus assures easier starts and permits hauling longer trains easier.

Lower maintenance costs for plain, cavity hub and anti-friction bearings are also assured when you use Texaco Olympian Grease. It resists oxidation... protects bearings by sealing out dirt and moisture. It won't leak out in service, or separate in service or storage. Seasonal weather changes do not affect its fine lubricating qualities.

Texaco Olympian Grease is made in three consistencies especially for mine service. Use it also to keep cutters, loaders and similar equipment running efficiently and economically.

Let a Texaco Lubrication Engineer show you how effective lubrication can increase efficiency and reduce costs throughout your mine. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, National Sales Division, Dept. C, 135 East 42nd Street, New York 17, N. Y.

VISIT TEXACO AT THE 1949 COAL SHOW * BOOTHS 1312-13-14

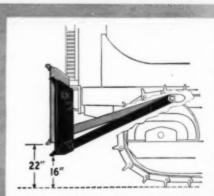
For the Coal Mining Industry

OUTPUSHES

On Any Stripping Job, Any Time

BIG VOLUME You get heaping loads fast with the BIG HD-19 pushing your scrapers on stripping work. A powerful, 40,000 lb. tractor with long, wide, sure-gripping tracks . . . it gets in there and really "bears down."

What's more — makes contact faster with any make or type scraper combination — no trundling along behind trying to catch up. Hangs on, too, throughout entire loading period — no losing scraper, no sudden, jarring contacts because there's no stopping to shift. Torque Converter automatically synchronizes HD-19's speed with speed of loading unit. And with a final, extra boost, gets scraper off with a flying start. Result — MORE YARDS MOVED AT LESS COST PER YARD.



NEW HEAVY-DUTY, ADJUSTABLE PUSHER PLATE NOW AVAILABLE FOR HD-19. It's bigger, stronger, heavier — weighs 1,600 lbs. It's adjustable — operates at 16" or 22" above ground . . . pushes any make scraper or self-powered hauling unit.

CONVERTER TRACTOR

OUT-DOZES

Of Year, Under Any Conditions

Shortens TIME ON EVERY
BULLDOZING JOB The heavier, surefooted, better-balanced HD-19, working with especially matched bulldozers — plus having the
advantages of the Torque Converter drive — assures
greater output on bulldozing. Operator can take a
deeper cut, roll bigger loads faster . . . and get back
for the next pass quicker — has a high reverse of 5.5

m.p.h. Load and terrain and use of throttle govern forward speed . . . and there's no worrying about engine stalling when tractor is overloaded — keeps running, regardless.

And because the HD-19 is on tracks it can be used everywhere on your operation — on wet, sandy or rocky going . . . no job too tough for it to handle. "Seeing is believing" . . . watch it outperform. Contact your Allis-Chalmers dealer.

ALLIS-CHALMERS

ORIGINATOR OF THE TORQUE CONVERTER TRACTOR

No Clean-up No Clean-up HERE... THE SANFORD-DAY Completely Sealed automatic

The "COMPLETELY SEALED" feature now being built into every S-D "Automatic" drop bottom car is money saving news to mine operators who have been looking forward to the day of dust-free tracks. Coal dust accumulation is expensive. Some mines have been spending over \$10,000 annually on track clean-up alone. What is it costing you? The S-D "Sealed Automatic" completely eliminates this expense because it is dust sealed both at wheel hoods and at the necessary clearance space between the doors and the frame. The coal dust can't dribble out and accumulate on the track . it stays in the car until it is dumped in the bin with the coal. This patented Sanford-Day feature is another step in maintaining Sanford-Day leadership in saving money for mine operators. You still get the same big capacity and automatic unloading. You get our improved long-life construction and our foolproof "Jerk-Out" unlatching device, that operates beneath the car. Now, with this revolutionary "COMPLETELY SEALED" construction . . . you get the greatest money saving car the industry has ever known

The S-D "Automatic", shown above and below, has our foolproof "Jerk-Out" unlatching device that operates underneath the car. It has two latch hooks for safe and foolproof operation, and all unlatching mechanism on end of car is eliminated.

No other car can offer you the advantages of S-D "Automatics" for efficient service, maximum production and low cost per ton of coal handled.



Did you know that, whatever your method of mining, it isn't new or peculiar to our "Automatics"? Regardless of the type of mine, there are S-D "Automatics" working under the same conditions elsewhere, and our company can show you these installations. So, if you have a special problem . . . if you're looking for greater efficiency, write today, we'll be glad to furnish complete details on the S-D "Completely Sealed Automatic," and how they are used in mines similar to yours. Seeing is believing, just contact us.





Here's where Coal-Flo saves you money



- 1. ELIMINATES TRACKAGE, awitches, bond. 2. CUTS TIMBERING COSTS by 30%, because belt runs close to rib. lets you use single propa
- under center of roof load for far greater safety 3. REDUCES COAL DEGRADATION, Belt runs
 - efficiently over pitches and rolls without jamming or mashing coal greater clearance beming or masning control recovery creature increases tween roof and helt, plus gentler handing. gives you up to 20% more coal in low seams. 4. STOPS HAULAGE INJURIES - no danger of
 - runaways with peril to "Jud-footers. 5. "UPS" TON-PER-HOUR CAPACITY with
 - continuous haulage no time lost for car ontainers namage—no time tox car sporting—cutters and loaders have no time out. 6. LESSENS FIRE AND EXPLOSION HYZARDS through elimination of hare wires and charged
 - coils, sparks and open wires.

- 7. LOWERS OPERATING OUTLAYS power. maintenance and operating expense are all
 - 8. SMOOTHS OUT DELIVERY AT TIPPLE because it's continuous, uniform and automatic.
 - 9. ENDS BRUSHING you leave your gob in-
 - side, even in low-cam coal, because belts 10. NO NOISE to keep you from bearing a "work.

 - 11. GREATER SAFETY because safer timbering and no operating vibration end threat of
 - 12. LEVELS VOLTAGE REQUIREMENTS 110 neaks and valleys or surges, and hetter voltage regulation compared with intermittent operation.

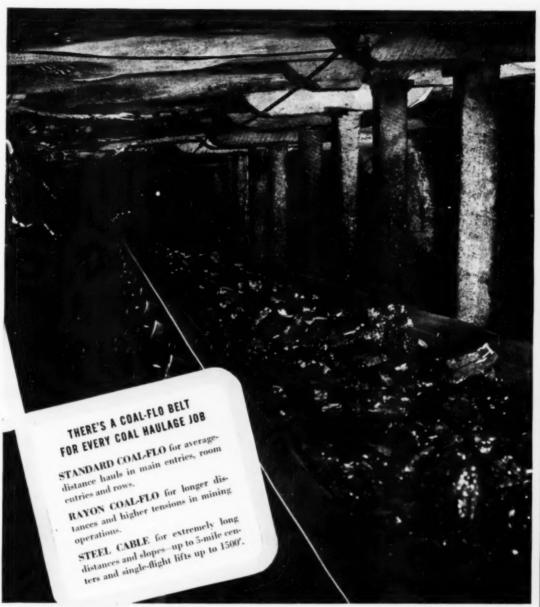
THECK these points where COAL-FLO Lebelting can save you money in hauling coal from face to tipple. No guesswork about them-these are actual savings made with COAL-FLO-they're proved ways to cut down climbing cost-per-ton.

But that's only part of the story of COAL-FLO savings. Every COAL-FLO belt is built with tough acid-resisting rubber and is mildew inhibited throughout to protect it against underground moisture, acidic waters

and mildew. That means COAL-FLO belts last longer-keep cutting your costs longer -carry more tons of coal at lower cost in the long run than any other belt.

PROOF? More tons are hauled on Goodyear conveyor belts than on any other kind!

Ask the G.T.M.-Goodyear Technical Man -for a detailed study of your own operation, and further figures on tonnage records set up with Goodyear COAL-FLO belts. Write: Goodyear. Akron 16. Ohio.



Cont-Flo-T.M. The Goodpear Tire & Subber Compan

We think you'll like "THE GREATEST STORY EVER TOLD" - Every Sunday - ABC Network

GOODFYEAR

THE GREATEST NAME IN RUBBER

Power ton! 6.4¢ per ton!



Economical G-E mercury-arc rectifiers helped keep power costs down to this low figure, are quickly relocated at little expense, offer no maintenance problems, says Mr. Howard Petty, Electrical Superintendent, Truax-Traer Coal Company.

In June 1946 the Truax-Traer Coal Company installed a General Electric portable, sealedignitron mercury-arc rectifier in its Shamrock No. 1 mine at Kayford, West Virginia. Two identical units were added in March 1947. For sixteen hours per day, seven days per week, these rectifiers have been in continuous operation, available for service practically 100 per cent of the time.

Because of the advantages offered by General Electric mercury-arc rectifiers, Truax-Traer has now ordered four more equipments of latest design. With these in service, all power for this mine will be supplied by G-E portable sealed-ignitron mercury-arc rectifiers.

Why not check how G-E mercury-arc rectifiers can cut your over-all mining costs per ton? A wide range of ratings is available. For more details, send for Bulletin GEA-4047. Apparatus Department, General Electric Co., Schenectady 5, New York. According to Mr. Howard Petty, the Company's electrical superintendent, G-E mercury-arc rectifiers have provided the following advantages:

- LOW POWER COSTS. The three units helped to keep power costs at an all-time low; only 6.4¢ per ton.
- PAST, ECONOMICAL RE-LOCATION. After a place is prepared, the entire unit is moved and back in service in only four hours.
- MINIMUM MAINTENANCE. No major rotating parts.
- Easy PORTABILITY. Entire unit can be moved close to the working face.
- FERSONNEL SAFETY. Units are completely enclosed to prevent accidental contact.
- 6 HIGH OVERLOAD CAPACITY. The equipment can be operated at 150% of rated maximum load without damage.
- **10W-SLUNG DESIGN.** Maximum height of only 48 inches permits these compact units to be used in cramped areas. (Standard 42-inch units also available.)
- DEAD-FRONT PANELS. Give maximum personnel protection, as well as keep out coal dust and dirt.

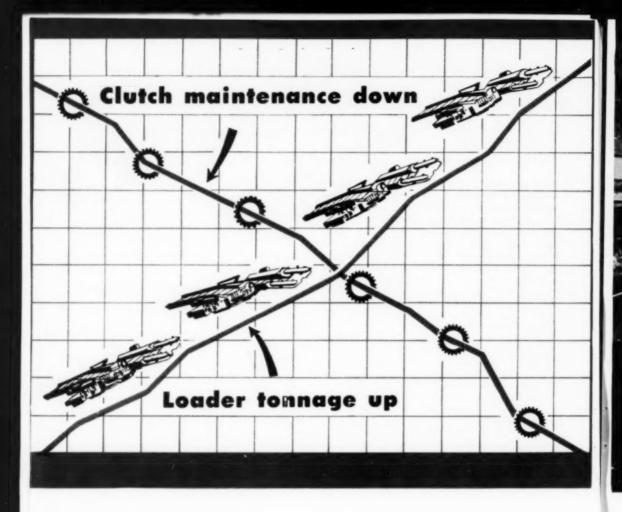
THREE INTEGRATED CAR UNITS make up a G-E portable mercury-arc rectifier. Compact and efficient, this equipment permits conversion from a-c to d-c thousands of feet closer to the working face. It makes long, low-voltage d-c feeders unnecessary, assures full voltage at the working face for efficient operation of locomotives, cutters, loaders and other mining machines.







GENERAL & ELECTRIC



Superla Mine Lubricants keep transmission cases clean. Tramming clutches operate easily with no gumming or coking caused by oil deposits. Oil circulates freely between plates, keeps the plates cool, makes them last longer, and keeps the loaders out of the shops.

A test of new Superla Mine Lubricants in your equipment will prove their many advantages. Grades are available for both grease- and oillubricated cutters and loaders. The Standard Oil Lubrication Engineer in your Midwest locality will help you make a test. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.



STANDARD OIL COMPANY (INDIANA)



SIX grades for lubricating any type of cutter or loader

No. 90. An oxidation-inhibited oil containing a detergent additive. It provides exceptionally clean operation and low oil consumption for oil-lubricated gear cases.

No. 0. A high-quality additive-type oil similar to No. 00 except that it is a slightly heavier grade. It is designed for Goodman loaders and cutters.

No. 2. A soft, semi-fluid grease for lubricating gathering-head gear cases where greater fluidity is desired than that usually provided by most loader grease,

No. 4. A semi-smooth grease particularly resistant to thinning out under heat and mechanical working. At the same time it can easily be poured from the barrel bung at ordinary mine temperatures. It is especially designed for Joy loaders.

Superla Mine Lubricants

No. 6. A grease of heavy consistency and good high-temperature characteristics. Its fibrous structure makes it particularly useful on mine car wheels and for general underground lubrication.

No. 8. A smooth grease having superior high-temperature characteristics. It is suitable for armature bearings and pressure-gun work where a grease of heavy consistency is desired.

STANDARD OIL COMPANY (INDIANA)





JEFFREY

will present a
COMPLETE LINE OF
MODERN EQUIPMENT
FOR TRACKLESS MINING

DON'T MISS IT!

Also on display
AT THE
SHOW...







NEW Heavy Duty Double Roll Crusher-for preparing coal ready for the Jig without further treatment. Reduces coal, refuse, slate, sulphur -everything from the mine loader-will give a 5" or larger product.

Electric Vibrating Grizzly Feeder with the NEW enclosed power unit. This feeder ideal for by-passing fines ahead of primary and secondary crushers, screens, picking tables, etc., bedding conveyors with fines. Positive control over tonnage handled

NEW 12-A series Aerodyne Mine Fan-you'll want to see this new type unit which features: low speed; high efficiency and reliability; increased range of blade angle adjustment. Maintenance is negligible-easy to install and service

JEFFREY EQUIPMENT FOR THE COAL MINE AND PREPARATION PLANT INCLUDES:

Coal Cutters Drills

Londers Lecomotives Fans and Blowers

Shuttle Cars Slack Conveyors

Underground Conveyors

Jigs and Washers Loading Booms

Screens Crushers

Belt Conveyors Scraper Conveyors

Chains & Transmission Mach'ry Car Pullers

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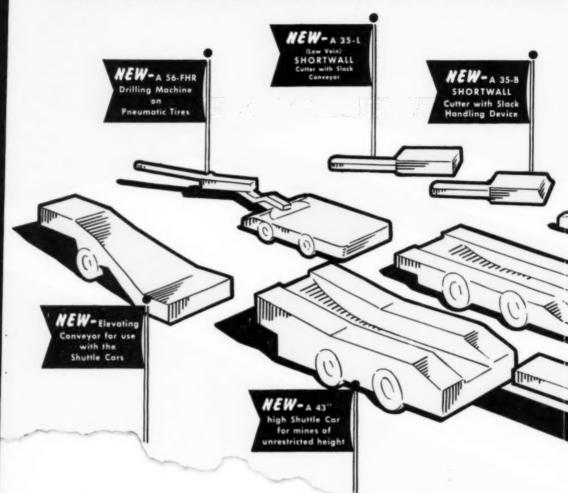
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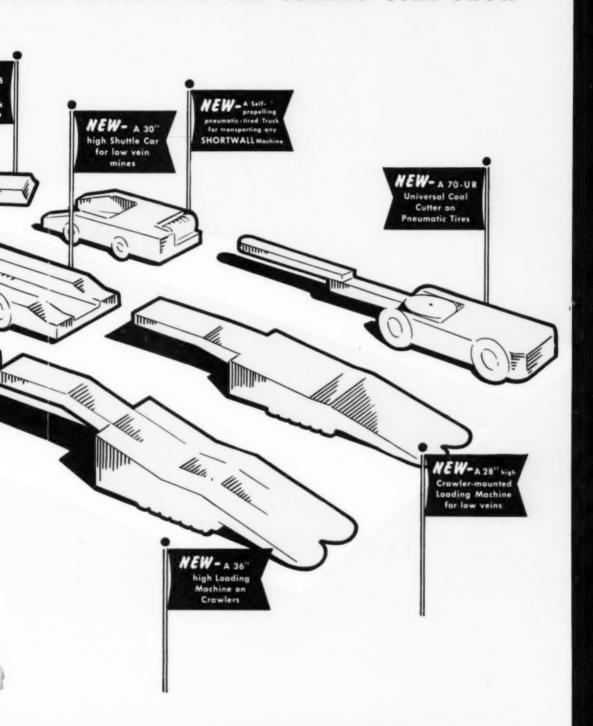
HERE IS A SNEAK PREVIEW OF THE JEFFRE



These NEW Machines will be Unveiled for the First Time..

Plus other equipment of vital interest to the Industry ... including the Jeffrey 61-CLR Conveyor-Loader which was the smash hit of the '47 Coal Show. It will be shown again for those who missed it-

FFREY EXHIBIT AT THE COMING COAL SHOW



WHEN YOU BUY TURE CABLES YOUR MONEY BUYS



. . . More months of trouble-free service per cable, steadier output per each unit of portable electric equipment, bigger savings for you, for Simplex-TIREX Portable Cables feature the toughness, flexibility, and electrical stability that add up to unbeatable performance under all service conditions.

Wherever put to work; in underground and surface mines, in construction projects, in railway shops and shipyards — on any job where portable apparatus plays a vital role — TIREX Cables can be depended upon for the endurance and efficiency that keeps machinery hard at work.

Only TIREX Cables are protected by Selenium Neoprene Armor, the cured-in-lead jacket that provides balanced resistance to abrasion, oil, grease and chemicals, sunlight, heat and flame. They are made in sizes and types adaptable to all portable equipment from tools, welding machines and lighting units to heavy shovels, dredges and mining machinery. For complete information, write for Catalog 994.



Simplex-Tirex

SIMPLEX WIRE & CABLE CO., 79 SIDNEY ST., CAMBRIDGE 39, MASS.

Invitation

TO AN EXHIBIT

PACKED WASTION

Mack has assembled an action-packed exhibit that will be of interest to every visitor at the Coal Show.



SEE THE BIG, NEW MACK TRACTOR-TRAILER COAL HAULER!



INSPECT MACK'S HUGE 30-TON SIX-WHEELED CHASSISI



SEE THE FAMOUS MACK BALANCED BOGIE IN ACTIONI

Siggest four-wheel driven truck bogie in standard production.



SEE THE EXCLUSIVE MACK POWER DIVIDER IN ACTION!

The unique device that assures positive traction over rough terrain and through slippery mud or sand.



SEE THE MACK DUPLEX TRANSMISSION IN ACTION!

Largest transmission ever produced for motor trucks . . . all parts exposed so that its operation may be observed at all speeds.

Mack representatives and engineers will be on hand to greet you. They'll gladly answer any questions you may have. Drop in and see us. We're sure you'll find it interesting and well worth your while.



Mack

SAU W

Mack Trucks, Inc., Empire State Building, New York 1, New York Factories at Alientown Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Limited.

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TIAVE you ever naticed how many old time Kachrings are still operating profit obly, day efter day in your territory. There's an important "plue" value for you in this long-life characteristic of the Kachring encovator line. You get monthon an encovator when you buy a Kachring ... you get insurance the your machine can keep working an earning an heavy, 3-shift schedules during peak periods, war crises, and other amergencies that can occur during the life-time of your excevator.

Heavy-duty loader in this Verset is Restrict 185 has rugged, deal-purpose bean he best have all this sever 20 to 25 ° aver units require apparate beauty, 205 also private to begin a classification.

305

Assisting 400's law, amount using the common country country independent beam held, such such this mass productive. Big 37" sower clarks requires only 1/10th norm lever poll, retains "feel". 605 hondles all standards asserted demandations of clarific and the second of the second of

For heavy-duty hauling...

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KOEHRING heavy-duty...

THIS heavy-duty "ples" in Kockring excavators assures less dewn-time, law er maintenance casts... more worktime. They have a good reputation among owners and operators for steady cutput... steady income. This also have an important bearing on re-sale price any time during life-time of the excevator. You will never lives an "orphan" on your hands, with Kockring behind your machine. So before you invest in excavators, livestigate Kockring "profit insurance". Get all the facts from your Kochring distributor.

300

For cases regions of agriculturally, clock Eaching 304's seem of the seem of t

24 yourd

Heavy-daty Kashing 1903 Introduces kin yardings out party and portaining uses not proposely available in the 2½-yeard closs. His order regard to every stead to the base his soft-adjusting 4' power clotch, positive fraction between asserting. 2-section between these second close to the control of the contr

KOEHRING

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SUBSIDIARIES: KWIK-MIX . PARSONS . JOHNSON

SEHRIA TANDA

See us Horking

FIRST TIME EXHIBITED



274 SHUTTLE CAR

—cable reel operation; two wheel drive; four wheel steering; four wheel brakes.

FIRST TIME EXHIBITED

L-20 SHAKER DRIVE

—a one piece, high capacity unit with an over-all height of only 25%.

Also to be on display for your inspection: the famous 512 Short-wall with Bugduster; the 712 Shortwall for topcutting; the 460 Track Mounted Loader; the 99-5 heavy duty, coal mine belt conveyor; a Type 91 slo-speed gathering locomotive.





THE SHOW-BOOTH 114



CUTTER BITS

- Heat-treated and specially designed for coarse cutting, Bowdil bits save power-save time-save money. Bowdil bits have 25% more wearing length. Actual operating records in hundreds of mines prove they last 15% to 20% longer than others.



FABRI-FORGED CHAIN

-is rugged-requires less maintenance than other types. Chain circles cutter bar at correct angle because of Bowdil's true-running. radial track guide. Drop-forge lug body stands up under heavy wear —is built for many times the normal load. Chain is easy to connect, remove or replace.



CUTTER BARS

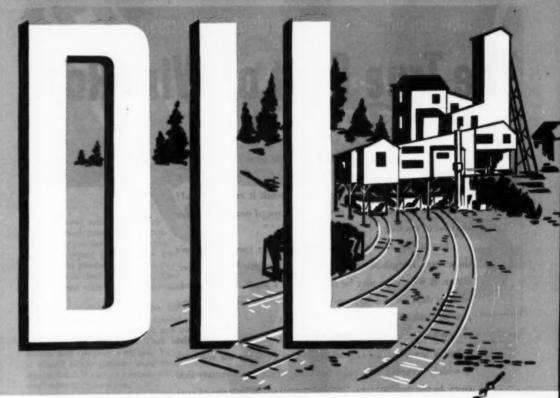
-High physical alloy steels and rivet-free design give Bowdil bars their great strength. Made for coarse cutting, they save powerprovide long, trouble-free service. Fit all standard cutting machines.

FIELD MEN AND REPRESENTATIVES in West Frankford, Illinois . Whitesburg,

Charleroi, Pennsylvania . Denver, Colorado

Williamson, West Virginia

Bowdil Equipment in your mine...





REPLACEABLE

—make it possible for miners to carry "extra picks in their pockets." Designed for ideal weight and balance, workers would still choose this pick—even without the special replaceable, heat treated points.



CHOKE-ARC TRANSFER SWITCHES

—enable you to cut power immediately in case of a break down in the electric system. Bowdil switches are dependable—operate instantaneously. A vital safety factor!



AUGERS & DRILL BITS

—are furnished in many sizes and styles. All are heat-treated, tough, and long-wearing. Correct auger design eliminates "grabbing." Fishtail, four-point, two-point, etc., styles assure you of the right bit for every job.

Big Stone Gap, Virginia

Canton, Ohio

Birmingham, Alabama

Centerville. Iowa

Helper, Utah • Kansas

Kansas City, Missouri

Topeka, Kansas

New Castle, England

THE BOWDIL COMPANY

CANTON, OHIO

brings profits out with the coal!

The True Cost of Wire Rope

You probably have accurate records showing your total wire-rope bills for any given year. But do your records also show what each rope cost per unit of work it accomplished? If not, you can't accurately compare the cost of one rope against the cost of another.

In making such a comparison, purchase price alone isn't the answer. Length of time installed isn't necessarily the answer, either. A wire rope may be installed on a machine that stands idle for days on end. The only true measure of its worth is the cost per unit of actual work it does in its life.

What a "unit of work" is depends, of course, upon the industry involved. In oil-country rotary drilling, the ton-mile is widely accepted as a basis for computing actual rotary-line costs. In the coal country, "unit of work" could be a ton of coal hauled up a plane; or a ton of earth handled on a dragline job. In many cases, it isn't difficult to record or closely estimate the totals accounted for by a given rope—and thus learn the rope cost per unit of service rendered.

On this basis, we'll stack Bethlehem wire rope against the field. Time and again, on jobs where records have been kept, it has proved its economy in the truest sense. It's strong and durable, willing and able. We'd like to make a suggestion: get some Bethlehem rope, put it on the toughest job you've got—check its performance. Our guess is, you'll be mighty well satisfied with what you find.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation



When you think WIRE ROPE . . . think BETHLEHEM



A swift return to the job and renewed production is possible when you use ESCO Manganese steel repair parts. These are designed to produce maximum payloads and to last on the job. They may be used with all standard makes of buckets.

Typical of these parts is the ESCO flat side drag chain. It is composed of solid cast links, made of shock and wear resisting manganese steel. They become harder and tougher with use. Extra steel is placed where greatest wear occurs. Designed for full surface contact, ESCO chains don't have to "take a seat."

With conventional round link chain, contact is at one restricted point only, which wears chain rapidly and reduces strength.



Flat surface of ESCO links distributes wear over maximum area. With wear decreased correspondingly, chain outlasts other types.

Other ESCO Accessories for Greater Production

Box-type Points and Adapters

Hoist Chains

Pear Links

Rope Sockets Weld-on Tooth

Points

Spreader Bars

Drag Cluster Rigging

ESCO Repair Links for Rugged Service

Simple in construction, and easy to use, ESCO hinge repair links are made of manganese steel, with a high alloy steel pin. They are flexible in use, with strength enough for severe service.

ESCO catalog 108H contains sizes, dimensions, and other detailed information on these accessories. Get your copy from your nearest ESCO office or use the coupon. Electric Steel Foundry, 2179 N.W. 25th Ave., Portland 10, Oregon; 728 Porter St., Danville, Illinois. Offices in Pottsville, Pa.; Eugene, Oregon; Chicago; Honolulu; Houston; Los Angeles; New York; San Francisco; Seattle; Spokane. In Canada, ESCO Limited, Vancouver, B.C.

ESCO

DIPPER AND DRAGLINE BUCKETS



Coal Mechanization Era

. . Marvels of Modern

In this fast-moving era, when coal is being mechanized from face to furnace, Wilmot offers you a complete line of preparation equipment, based on advanced engineering to help you better your competitive position and to build bigger profits. Below are illustrated the Wilmot Hydrotator and Hydrotator-Classifier, two units which typify Wilmot advanced engineering. Some of the modern advantages of these units follow.

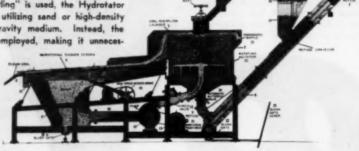
FULLY AUTOMATIC—One man can tend three or more Hydrotators, self-regulating for changes in quality or quantity of intake.

GREATER YIELD OF CLEAN COAL—During periods of interrupted feed there is no loss of good coal, because automatic controls close butterfly valve in refuse discharge line.

BETTER CONTROL OF QUALITY—Eliminating

WILMOT HYDROTATOR—Fully automatic. While the principle of "Hindered Settling" is used, the Hydrotator oliminates the necessity of utilizing sand or high-density liquids to obtain a high-gravity medium. Instead, the coal fines themselves are employed, making it unneces-

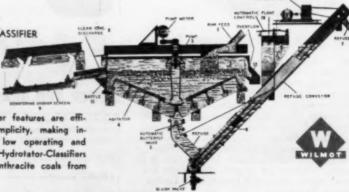
sary to reclaim the separation medium. Cleans the following anthracite sizes: Egg, Stove, Nut, Pea, Buck, Rice, Barley and No. 4. Also made in models for small operations.



WILMOT HYDROTATOR-CLASSIFIER

A flotation principle unit for preparing and reclaiming the smaller sizes of coal from breaker wash water. New fully automatic controls afford a higher degree

of accurate regulation. Other features are efficiency, compactness and simplicity, making increased output possible at low operating and maintenance costs. Wilmot Hydrotator-Classifiers are designed for cleaning anthracite coals from —3/64" to +100 mesh.



Automatic Coal Cleaning

the necessity of a special high-gravity medium, the Hydrotator process affords a simple and more accurate way of maintaining the desired gravity.

LOWER OPERATING COST—Small size Hydrotators require as little as 5 hp., and consume only 60 gal. of water per minute. Simplicity minimizes maintenance.

COMPLETE LABORATORY FACILITIES

The research of the Wilmot laboratory is synchronized with our engineering work in a constant program for the development of improved coal preparation methods. It is from the laboratory that our engineering department derives the testing data needed to assure the efficiency of the designs for every new breaker or modernization contract.

America's Largest Builder of
Anthracite Preparation Plants

Wilmot designs, builds and equips breakers—from the blueprint to the operation stage. Thus you are able to attach responsibility for every specification detail to a single supervisory force. This has vast advantages and is one reason why Wilmot builds more breakers. Our laboratory, engineering, manufacturing and construction facilities are integrated to assure completion in a minimum of time and with a full guarantee that it will meet every planned requirement. The new Centralia breaker shown here is an example of such an overall contract. Scores of other breakers have been equipped with Wilmot preparation units to enable them to meet today's exacting needs.

Equipment for Every Coal Preparation Job

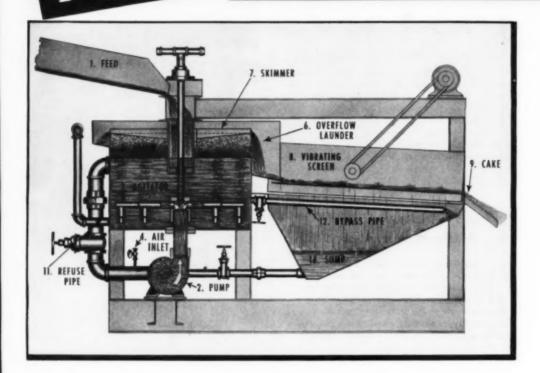
Hydrotators, Hydrotator-Classifiers, Hydro-Separators, Simplex Jigs, Portable Cleaners, Crushing Rolls, Sizing and Dewatering Shakers, Picking Tables, Settling Tanks, Bucket Elevators, Car Hauls, Flight and Apron Conveyors, Underground Chain, Conveyors, Keymons Rivelless Chain.

WILMOT ENGINEERING CO.

HAZLETON, PA. . Plant: WHITE HAVEN, PA.

CENTRALIA (Pa.) MINING COMPANY'S NEW BREAKER (below)-Recognized for its advanced engineering, this recently completed anthracite plant was designed and built by Wilmot Engineering Co. The following Wilmot preparation equipment is installed: Hydrotators, Hydrotator-Classifier, Crushing Rolls, Sizing and Dewatering Shakers, Lip Screen Shaker, Picking Table, Push Feeders, Conveyor Lines, Settling Tank. STEVENS COAL CO., Treverion, Pa. Built and equipped by Wilmot, 1938 GILBERTON COAL CO., Gilber ton, Pa. Built and equipped by Wilmat, 1943 HAUTO COAL CO., Haute, Pa. Built and equipped by Wilmet. 1944

NEW ... the Rand S FROTH



Here's How You Recover Marketable Coal from Sludge Ordinarily Worthless...with the Rand S Froth Flotation Hydrotator

- 1. After suitable conditioning, coal enters tank through Feed Chute and Feed Well.
- 2. Circulating Pump takes water from side of main tank and delivers it to tank bottom through...
- Agitator, which distributes circulating water and coal uniformly over tank bottom, from where they rise to pump intake level.
- 4. Air is drawn into pump through a valve, is distributed

- over bottom with water and coal. Coal rises with air bubble as . . .
- 5. Froth, which overflows into ...
- 6. Overflow Launder, with aid of . . .
- 7. Skimmer, attached to rotating Feed Well and Agitator. Froth flows to . . .
- 8. Vibrating Screen, which "kills" froth and delivers it as . . .
- 9. Cake (low ash and dewatered).

- Water and entrained high ash coal, together with excess reagent, pass screen to . . .
- Sump, where they join pump circulation and are returned to main tank.
- Refuse, with all excess water from feed, is discharged from tank bottom by adjustable tube which controls level of water below frothing zone.
- 12. Bypass pipe to provide sluicing water.

FLOTATION HYDROTATOR

- ★ Recovers marketable coal from sludge ordinarily worthless
- ★ Recovers coal without settling
- * Minimizes pollution of streams and rivers

The new R and S Froth Flotation Hydrotator cleans and separates fine coal from sludge heretofore considered of no commercial value.

It recovers coal without settling; yet the equipment occupies only a fraction of the space required by a thickener large enough to effect similar recovery by gravity. Froth is killed instantly and delivered in cake form.

Water is clarified and pollution of streams and rivers is minimized important today in view of increasing government regulations on this point.

For more complete details on this new Roberts and Schaefer equipment, for competent counsel on your individual coal cleaning operations, get in touch with R and S engineers. They can help you determine your potential profit—and can show you how you can get it.

Your plant—modernized by R and S engineers—will better meet highly competitive conditions, will take profitable advantage of particular uses and demands for coal in the days to come.



ROBERTS and SCHAEFER CO.

130 North Wells Street, Chicago 6, Ill.

2801 Broadway Ave. PITTSBURGH 16, PA. P. O. Box 570 HUNTINGTON 10, W. VA.

FOR THE LAST WORD IN MODERN COAL PREPARATION, VISIT SPACE 1000 AT THE COAL SHOW

... see the RandS Froth Flotation Hydrotator in operation . . . as well as the improved RandS Super-Airflow

AT SUNNYHILL.. It's



JISH BIESEL FUEL

... furnishing Power for these Giant Diggers

The Sunnyhill Coal Company at New Lexington, Ohio, is one of the larger coal-stripping operations in the country. Its mammoth draglines, shovels, tractors and bulldozers can move 6,000 tons of coal per day. The majority of this equipment is diesel-powered and operates with Ashland Special Diesel Fuel.

For big stripping operations like this, a dependable fuel like Ashland Special Diesel Fuel is of first importance. Its unvarying adherence to top-quality specifications, together with perfect atomization and complete combustion regardless of temperature or operating conditions, makes it ideal for the job.

For Sunnyhill Trucks, Pumps and Drills, the Choice is...

In addition to its Diesel equipment and trucks, Sunnyhill also operates more than 150 gasoline-powered machines. Here, too, Ashland Products get first choice. Operators have found that this superior diesel fuel and this catalytic fortified gasoline give them more power and more trouble-free operation. Both are season-right, operate as well in below-zero weather as in the hottest summer.



Ashland all the way!



Always a Clean Coal — — Dust-Proofed and Freeze-Proofed with

At Sunnyhill, the advantages of clean coal are fully realized. Thousands of tons of coal are washed daily in this new and modern washery.

After washing, a big percentage of Sunnyhill coal is oil-treated with Ashland PERMATREAT COAL SPRAY. This seals-in dust, protects coal all the way to the user. During winter months 75% of the stoker and furnace grades are oil-treated. In addition, many dealers and industrial users request freeze-proofing to facilitate unloading of coal from cars in freezing weather. This is accomplished economically and efficiently with PERMATREAT COAL SPRAY.

Modern Oil Treating System

Sunnyhill, like many other large operators, uses a modern spray system which assures complete coverage, seals-in every particle of dust and provides a perfect, clean-handling coal. The complete atomization and resulting fine spray obtained with Ashland PERMATREAT make it the most economical treatment for all sizes — stoker, egg, nut or lump.



Better Coal - Bigger Sales

The Sunnyhill Coal Company advertises "The Finest Coal Ever Produced in Ohio." Their increasing sales and continuous operation since their seam at New Lexington was opened are proof that careful preparation and treatment of coal are sure ways to success in the mining and sales of coal.

Ashland's strategic position in the heart of the soft coal districts makes this same fine group of petroleum products available to any coal operator in this area. Write for information or ask for one of our sales engineers to call.

Ashland Oil & Refining Company

ASHLAND, KENTUCKY

Sales Offices: Pittsburgh, Pa.: Cleveland, Ohio: Cincinnati, Ohio: Louisville, Kentucky: Evansville, Ind.

Now...The New ROCKMASTER 16

Blasting System



Less Bark . . . More Bite

Greatest Improvement in Blasting
Since Atlas Pioneered Rockmaster—
the original milli-second blasting system!

The new ROCKMASTER 16 Blasting System has been under trial for almost two years. It is now ready to go into action in pits, quarries, underground work, construction jobs ... a basic improvement over the sensational original Atlas Rockmaster system.

ROCKMASTER 16 brings you a sixteen-stage milli-second delay system! It gives you all the advantages of the original ROCKMASTER three-delay system PLUS new and even better control over breakage, throw, noise, vibration... sufficient milli-second delays to fill out large underground rounds and shots requiring a large number of delays.

Here are just a few of the many outstanding advantages of the new ROCKMASTER 16 Blasting System demonstrated in actual field work.

BETTER BREAKAGEmeans cheaper loading and milling . . . less secondary shooting. Wide choice of milli-second delays gives you improved control over material size.

CONTROLS BACK-BREAK... SAYES COAL IN STRIPPING. Sixteen periods give you long or short milli-second delays as needed for different formations. Explosive energy is directed toward burden—not wasted in back-break or in degradation of coal.

INCREASES MINE SAFETY. Less vibration means less strain on timbers and roof, less dust, quicker return to face. Sixteen delay periods fire in 550 milli-seconds!

REGULATES THROW. Gives high rock piles at the face—or lower piles farther out. Sixteen ROCKMASTER periods give you remarkable control of throw.

MORE MATERIAL PER POUND OF EXPLOSIVES. More footage per round. Makes savings in dynamite, in drilling, or both.

FEWER COMPLAINTS ABOUT NOISE AND VIBRATION, ROCKMASTER 16 frequently cuts vibration more than 60% —even when more dynamite is used!

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ROCKMASTER Reg. U. S. Par. Off.

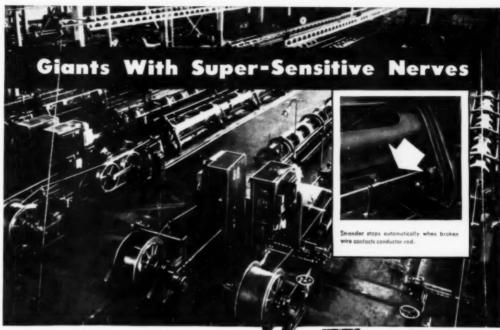


EXPLOSIVES

"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address - Atpowco



Wickwire's modern rope machines (some of which twist as many as 46 wires into strand in a single operation) operate at tremendous speed. Yet, if a single wire breaks or if the wire in a spool runs out, the entire machine comes to a dead stop in less than six seconds.

When the sensitive automatic electric controls and air brakes have brought the strander to a stop, the wire ends are micro-welded by a skilled operator, who subsequently anneals the weld to restore its original toughness and ductility. Such thoroughness is your assurance of the uniformity and perfect construction, necessary if a rope is to deliver the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers in key cities everywhere are ready to help solve your wire rope problems and to supply the type of rope that best meets your requirements. Wickwire Rope is available for prompt delivery from strategically located warehouse stocks and is supplied in all sizes and constructions, both regular lay and WISSCOLAY Preformed.



HOW TO REDUCE ROPE COSTS AND PROLONG ROPE LIFE

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write— Wire Rope Sales Office, Wickwire Spenier Steel, Palmer, Mass.

WICKWIRE ROPE

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT - Palmer, Mass.

EXECUTIVE OFFICE - 500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) - Boston - Buffalo - Chattanooga - Chicago - Denver - Detroit - Emlenton (Pa.) - Philadelphia - Tulsa - Fort Worth - Houston - New York
PACIFIC COAST SUBSIDIARY — The California Wire Cloth Corporation, Oakland 6, California

Interested in a LOW CAPITAL-COST WAY TO INCREASE CLEANING CAPACITY WITH BETTER OVER-ALL GRADE AND RECOVERY?

Read How You Can Quickly Supplement Present Preparation Facilities With Heavy-Media Separation To Achieve Any Or All Of These Advantages:

BETTER QUALITY COAL:

The addition of a small Heavy-Media Separation unit to your present cleaning plant can raise the quality of your total coal output. You can then operate your present cleaning equipment at its most efficient setting to produce "specification grade" coal without regard to clean coal losses. Send the near gravity fraction or the refuse to Heavy-Media Separation for precision cleaning. With this combination, you can attain the over-all cleaning efficiency of a complete Heavy-Media Separation plant.

REDUCED BANK LOSS:

Marketable coal now going to refuse can be recovered by a supplementary Heavy-Media Separation unit because Heavy-Media most closely duplicates heavy-liquid results, makes a practically perfect separation over a wide size and gravity range.

INCREASED CAPACITY:

If you are now making and recirculating a middling, you can send that product directly to Heavy-Media Separation and feed at least an equivalent amount of extra tonnage of raw coal in at the head of the plant. By using this method, one operation increased raw feed capacity by 22%.

LOW CAPITAL COST:

A small investment in Heavy-Media Separation equipment a fraction of the cost of a new cleaning plant—will provide the over-all cleaning efficiency of a new Heavy-Media Separation plant treating your entire feed.

NO LOSS OF OPERATING TIME:

An auxiliary Heavy-Media Separation unit can be installed in or adjacent to your present cleaner without interrupting current production.

QUICKLY INSTALLED:

Prefabricated plants with capacities up to 125 tons per hour (enough to modernize a good-sized washer) are available for prompt delivery. Larger Heavy-Media units can be quickly designed and installed thru the accumulated experience of well-known engineering firms.

NET, by supplementing your existing preparation plant with a Heavy-Media Separation Unit you can meet today's and tomorrous's market specifications... increase cleaning capacity... ship a higher percentage of the coal you mine... wind up with a worthwhile return on a relatively small capital investment. And as a bonus, get insurance against becoming a marginal producer!

Of course, the arithmetic will vary for every mine. But the fundamental soundness of this approach to better quality, tonnage and profits is evidenced by the calibre of the operators now using or building supplementary Heavy-Media Separation units in existing plants. We invite exploratory discussion and are prepared to help you (or engineering firms of your choice) with pilot plant tests of your coal in the Cyanamid Mineral Dressing Laboratory, assistance on plant design and the services of Cyanamid Field Engineers to tune up your Heavy-Media Separation unit.

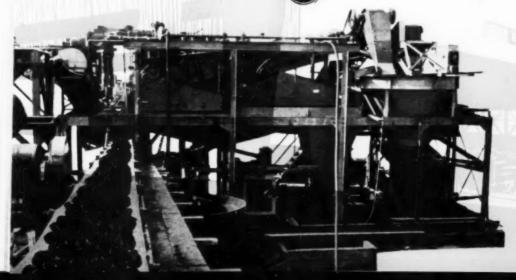
AMERICAN Gyanamid COMPANY

MINERAL DRESSING DIVISION

30 ROCKEFELLER PLAZA



NEW YORK 20, NEW YORK



Take a

WALWORTH No. 225P

Bronze Valve

Apart...

COMPARE IT PIECE BY PIECE

It will pay you to look inside the Walworth No. 225P. Compare the improved design, construction and convenience features shown in the "exploded" view. Notice the husky bronze body, the removable seat and disc, the oversize stem, all assuring maximum protection against wear and leakage.

Further, No. 225P is the TOUGHEST bronze valve your money can buy. The stainless steel, non-corrosive seats and discs are heat treated to a hardness of 500 Brinell — hard enough to scratch glass and crush nails. For this reason, the valve can be closed on sand, slag, scale and similar flotage without injury to the seating surfaces, and "wire drawing" is practically eliminated. Thus years of tight, positive shut-off are assured.

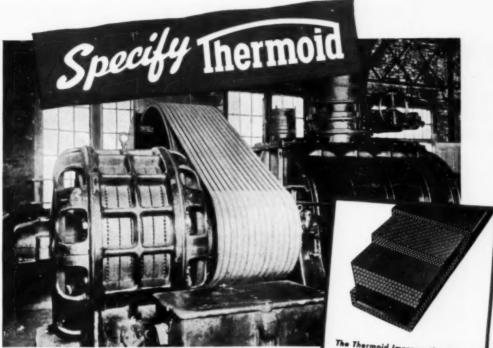
Available in both globe and angle types (angle type: No. 227P) in sizes ¼" to 2", this quality valve is recommended for 350 lbs. W.S.P. at 550 F, and 1000 lbs. non-shock service on cold water, oil, gas or air.

For full data on this long-life, economical Walworth Bronze Valve, see your local Walworth distributor, or write for Circular 82.

WALWORTH

valves and fiftings

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Thermoid Impregnation Process Assures Longer V-Belt Life

Thermoid V-Belts are built to withstand excess moistureabrasion-acidity-all those elements that hasten belt deterioration. All Thermoid V-Belts are built for the job . . . from the smallest fractional horsepower size up to the largest multiple V-Belt. Each belt is specifically designed and prestretched to transmit maximum power without slippage, to absorb repeated shock loads; and to provide smooth, efficient performance at the lowest possible cost per hour.

A complete range of sizes are available to meet your requirements.

For quick service call the nearest Thermoid distributor. Thermoid sales engineers are available for advice on special problems.

It will pay you to Specify Thermoid!

Thermoid Quality Products: Transmission Belting . F.H.P. and Multiple V-Belts . Conveyor Belting . Elevator Belting . Wrapped and Molded Hose . Molded Products . Industrial Brake Linings and Friction Materials.

The Thermoid Impregnation Process insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasion action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.



Main Offices and Factory . Trenton, N. J., U.S. A. Western Offices and Factory . Nephi, Utah, U.S.A.

Industrial Rubber Products . Friction Materials . Oil Field Products

Known and preferred in mines

M.S.A DISPLAY

Edison





Partner in Safety ... the famous M·S·A Comfo CAP



First in favor with the miner, the M.S.A. Comfo Cap offers a matchless combination of strength, light weight, and wearing ease. One-piece molded of tough laminated bakelite, the Comfo Cap cannot soften, swell or gain in weight from exposure to moisture. Its smooth, low-crowned shape can't snag on contact with low roof or ribs—flexible sweathand and adjustable inner head cradle assure snug fit. In every detail, the Comfo Cap serves safety and comfort on the job! Write for Bulletin DK-8.

throughout the world for unfailing light at the working place

ELECTRIC CAP LAMPS

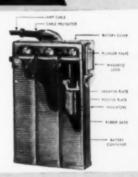
For the miner underground, light is a primary aid to safety and efficiency. The better the light, the better his ability to take care of himself—and his job!

• On the basis of unfailing light, high-powered, effectively directed to the work, EDISON Electric Cap Lamps are a major resource of mining managements for

increasing tonnage and lowering accident rates.

On the score of long-term economy, EDISON Lamps are first again—because of dependable service measured over many years of useful life.

U. S. Bureau of Mines-approved, EDISON Electric Cap Lamps are of mining quality through and through... built for finest service in every detail of design, construction and performance.



The Unique Edison Battery

Steel-built, using an electrolyte that is in itself a preservative of steel, the Edison Electric Cap Lamp Battery is unique in construction as it is in performance.

Nickel and iron are the reactive elements—they do not destroy themselves in order to function, and the Battery is unharmed by overcharging, short-circuiting or prolonged complete discharge. Each cell unit is protected and insulated by a rubber sack, which in turn is guarded by the sturdy outer container of tough stainless steel.

The demands of rugged mining service are met fully by the Edison Battery's strength and dependability proved by over 600,000 in use the world around!

Write for a practical demonstration in your operations



MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS AND MEADE STREETS

PITTSBURGH B, PA

At Your Service: 48 BRANCH OFFICES in the UNITED STATES

MINE SAFETY APPLIANCES CO. OF CANADA LIMITED. Toronto, Monteral, Calgary, Winniper, Vancouver, New Glasgow, N. S. MINE SAFETY APPLIANCES CO. (S.A.) (PTY.) (TD. - Johannesburg, South Africa; N'Dela, No. Rhadesia; Bulawayo, So. Rhadesia

Representatives in Principal Cities in Mexico, Central and South America CABLE ADDRESS: "MINSAF" PITTSBURGH



Bend any V-Belt and feel the sides change shape. The top of the belt, under tension, narrows. The body, under compression, widens. The sides of the belt bulge out.

The result, if the belt is built with straight sides, is a shape that does not fit the sheave groove—as shown in Figures 1 and 1A, below.



Straight-Sided V-Belt



Welt Bulges in Sheave-Groove

Clearly, the bulging of the sides will produce excessive wear along the *middle* of the sidewall as indicated by arrows.

Now, bend a V-belt with the concave side—the Gates Vulco Rope.

You get the same shape change but now the new shape exactly fits the sheave groove—as shown in Figures 2 and 2A.

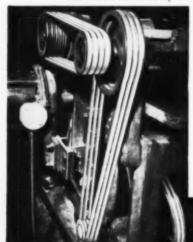


Gates Vulco Rope with Concave Side



No Side Bulge Precise Fit in

Results? (1) Uniform sidewall wear; longer life! (2) Full sidewall grip on the pulley. Carries heavier loads and sudden load increases without slippage; saves belts and also saves bower!



The Concave Side is MORE IMPORTANT NOW Than Ever Before

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

Now that Gates <u>SPECIALIZED</u> Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

THE GATES RUBBER COMPANY DENVER, U.S.A.

The World's Largest Makers of V-Belts

494



The Mark of SPECIALIZED Research

GATES VULCO DRIVES

MONEY MAKERS





PENNSYLVANIA. On this rough-and-rugged backfill project the Wynn Construction Co. uses the right "zoned" equipment for moving 90,000 cu, yds, of rocky spoil at the rapid clip of 120 yds. per hour. Unit is a "Caterpillar" DW10 Tractor with Athey rock trailer.





KENTUCKY. Perfect teamwork! A "Caterpillar" Diesel D8 Tractor push-loads a No. 80 Scraper pulled by a second tractor of same type and brand. Result: fast, low-cost overburden removal from soft-coal deposit.

When you think of making more money (and who doesn't?) by moving earth and rock better, quicker, cheaper, think of sturdy "Caterpillar" equipment. When you want to see for yourself how such things are being done, you can find plenty of operations like those pictured here.

"Caterpillar" earthmoving outfits variously combine track-type and wheel tractors, scrapers, bulldozers, wagons, and motor graders. They are specially designed to work together, and are built to lower costs and speed production on every earthmoving job. As a result. they are world-famous for increased earnings and the hearty approval of their owners.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

DIESEL ENGINES - TRACTURES MOTOR GRADERS MOTOR GRADERS EQUIPMENT

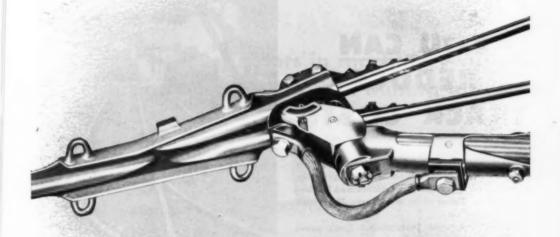
No Bungs...

O-B Smooth-Underrun Fittings can make Your Trolley Overhead as smooth as one continuous piece of wire from face to tipple

Now you can get a wire-smooth, level conductor path from tipple to face by building your overhead trolley system with O-B Smooth-Underrun Fittings. Gone are the "bumps, blows and burns" caused by uneven, off-level wire encircling fittings. Wire encircling fittings, causing the current collector to bump and bounce away from the wire, are a constant source of heavy arcing and wire burning, shortening the life of both the current collector and the wire.

O-B Smooth-Underrun Fittings firmly grip the trolley wire by the upper lobe only, leaving a completely free and unobstructed running surface for the current collecting shoe. Anchor tips hold the wire firmly to frogs and crossovers at the same level as the runners, and provide a smooth, level passage for the collector from wire to runner. These O-B Smooth-Underrun Fittings give you continuous wire smoothness throughout the entire length of your overhead trolley.

With this smooth-underrun your locomotives can operate safely at higher speeds with few dewirements—wire and collector life are lengthened. Plan your next overhead trolley system with O-B Smooth-Underrun Fittings.



O-B's Type-M Trolley Prog provides a one-level connection between trolley wire and frog runper. Instead of a bamp-producing wire encircling fitting, a Bulldog tip butts the trolley wire snugly to the frog runner. This places wire and runner on the same level, allowing the current collecting shoe to glide smoothly from the wire to the frog runner. A gradual ramp picks up the shoe and guides it on the flanges through the turnout. Another ramp then allows the shoe to settle evenly back on the leaving runner and passes it back to the wire without any bumping or arcing. Other O-B Smooth-Underrum devices include Bulldog Trolley Clamps and Splicers, Type-T Section Insulators and Types-T and R Section Insulator Switches.

3010 M





Okio Brass

MANSFIELD, OHIO

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ontario

Today's Good News

YOU <u>CAN</u> REDUCE TRACK COSTS

The skeptic will raise an eyebrow, for cutting costs today is a good trick if you can do it. But a number of mines—users of Bethlehem Prefabricated Track—are doing it with no tricks whatsoever. They were skeptical once, too.

, You see. Bethlehem Prefabricated Track saves waste, money, confusion in so many ways. Each installation is built to plan—a plan tailored to the needs of the individual customer. Rails come to you precut and precurved. There isn't the waste of rail that often occurs when a mine does this cutting and curving job itself. Besides, when Bethlehem does the job, you don't need elaborate shop facilities of your own.

Maintenance is low, too. In Bethlehem Prefabricated Track, every part is selected to function in harmony with every other part—to meet specific needs in a specific layout. Obviously, it requires far less maintenance, less watching, than "home-made" track where a part may be used simply because it's the first thing that comes to hand.





We wish we could tell you the full story here—how easy it is to install Bethlehem Prefabricated Track; how safe the track is, and the extra speed you can make on your trips. But we can't possibly, in a single page, so we suggest you talk with a Bethlehem engineer. He's a mining man and a track specialist. Without cost or obligation on your part, he'll be glad to discuss your track problems with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation

At the COAL SHOW, CLEVELAND, MAY 9-12

See model demonstrating the flexibility, simplicity, and efficiency of Bethlehem's prefabricated track.

On Exhibit at Our Booth Nos. 902 - 904 - 906



BETHLEHEM PREFABRICATED TRACK

See the OV Exhibit

AT THE COAL SHOW

The latest developments in machinery for the bituminous and anthracite coal mining industries



ALSO ON EXHIBIT: The standard line of JOY Loaders,

Shuttle Cars, Coal Cutters, Belt Conveyors, Mine Fans, Carpullers and Coal Drills . . . a complete line of "Silver Streak" cadmium-plated Rock Drills . . . a display of new and used "Sulmet" tungsten-carbide tipped Coal Cutter and Auger Drill Bits, with performance data.

For Modern Mining Equipment, Consult a goy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING . PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO



The Hodge Mining Company

Cartersville, Ga., is using 3 rubber-tired, electric control C Tournapulls to move 100% of their laminated iron ore from pit to grizzly at mine near Taylorville. These high speed modern units replaced four 18 yd. tractor scrapers units — are hauling out 25% more ore . . . keep the washer going at peak capacity.

Heavy Clay ... Grades to 25% Job Conditions Really Tough!

The C Tournapulls load the ore-bearing clay — weighing 3400 lbs. per yard — in a deep pit, 190 feet below grizzly level. They haul their loads 1700' one way to the washer, up a steep, slick, winding haul-road, which has grades that run as high as 25%.

Each Machine Averaged 5 Trips Per Hour

Loading in 40 seconds in 75 to 100', each Tournapull averaged $9\frac{1}{2}$ cu. yds. of heavy, ore-bearing clay per trip . . . completed the 2900' round-trip haul in 12 minutes . . . an average of 5 trips per hour . . . delivering an estimated $47\frac{1}{2}$ cu. yds. of material at the washer, despite occasional waiting time. Four tractor scraper units formerly used averaged less than 8 cu. yds. per trip per machine, and made fewer trips because of the slow crawler hauling speed.

C Tournapulls showed their advantage on 1200 foot return trip, too . . . being able to descend steep 40% grades safely because of their big, heavy-duty air brakes on all 4 wheels, plus finger-touch positive power steer.

mail	To: R. G. LeTOURNEAU, Inc., PEORIA, on 150 h.p., 13.3 yd. C TOURNAPULL. Price NAME	ILL. Please send facts Today Delivery Bulletin Specifications
70day	COMPANY	TYPE OF BUSINESS.
	Equipment needed to move aboutyds. per 8 hour shift.	



John Hodge, Owner, says

"On this job, with all adverse grades up to 25%, the three C Tournapulls with E-16 Scrapers are producing more yardage than the four tractors and 18-yard scrapers they replaced."

Adds 4th Tournapull to Fleet

As a result of this big-production performance even under such tough conditions— the Hodge Mining Company, LeTourneau user for the past 5 years, has added a 4th C Tournapull to their present fleet as an extra for the longer hauls.

See your LeTourneau Distributor today. Let him show you how the new high-speed, rubber-tired, electric control Tournapulls can help increase your job production . . . at lowest net cost per job. Or, mail the attached coupon for additional information on these high-speed earthmovers.

Loaded with heavy ore-bearing clay, one of 3 Tournopulis starts long, difficult houl up steep grades that run as high as 25%. All but 200° of this steep grade was negotiated by Tournapulis under their own power.

Here, 190° above level of cut, Tournapull unloads heavy material into washer grizzly. Rigs kept washer going at peak capacity...had to wait occasionally accounting for 12 min. cycle time.



ETOURNEAU



TOURNAPULLS

FOR LOWEST NET COST PER YARD



"...AND DRIVING OVER THIS GARNET IS A TOUGH TEST FOR ANY TIRE"

"We're mining garnet here and it's tough stuff. Garnet is used as an abrasive, so you can guess what it does to tires. And our trucks are driving over it all day. We've found these U. S. Royal Con-trak-tors can take it all the way."

U. S. ROYAL CON-TRAK-TOR. Just look at all the extras built right into this rugged tire:

- CUT-RESISTING TREAD with deep cleats gives your trucks 2-way traction.
- ROUNDED SHOULDERS improve flotation in soft going.
- SHOCK PAD CONSTRUCTION guards against rupture.

U. S. FLEET SERVICE. Your U. S. Royal Distributor is ready to draw up a tailor-made preventive tire maintenance plan designed especially for your operation—a plan which can give you lower cost per tire mile! He'll give you service where it counts—on your job! Call your U. S. Royal Distributor today. He's listed in your Classified Telephone Directory.

The finest tires you can buy are

U. S. ROYALS by U. S. RUBBER

Cummins-Rowered 24 A STAN Movers 295,000 Yaras 295,000 Tanah

A feet of 24 Camenias-Powered Racing Variation of earth Thumps moves an average of 203,000 yards of earth Thumps moves an Dick Construction Campany's job at

Locust Gup, Pa.

Their schedule calls for a one and one-half must round trip every 12 minutes . . 10 to 15-yard loads round trip every 12 minutes . . . 10 to 15-yard loads round trip every 12 minutes . . . 84 hours on the the way so the unloading point . . . 84 hours on the may so the unloading point . . . 84 hours on the

\$263 today.

*2 cords show yearly feel costs for a Commiss.

*2 cords show yearly feel costs for a Commiss.

Powered carb mover to be as much as \$1.1 38.80.

Powered carb mover to be as much as \$1.1 38.80.

Cummins Diesels

Make Money for You

CUMMINS DIESEI

HERE'S WHY . . .

- Fast work cycles
- Big fuel savings
- Low maintenance
- Minimum down-time
- Long engine life
- Warranty—100,000 miles or one year
- 'Round-the-clock service

GIANT New Eight-Wheel Drop-Bottom Mine Car



Don't Fail Huge Car

To see This Huge Car

CLEVELAND COAL CONVENTION

AND EXPOSITION...May 9th to 12th

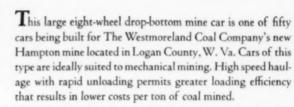
BOOTH Nos. 519-523

Q.C.f.

SON TON

COAL

COMPA NY

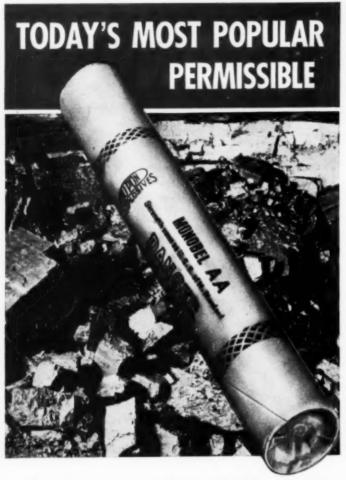


This huge car carries 30 tons of coal easily—it unloads quickly, automatically, without stopping the trip. Precious unloading time saved permits increased production.

Our sales representatives will be happy to explain the many important features of this new gigantic 8-wheel drop-bottom mine car. Cars of this type may be the answer to your transportation problems. American Car & Foundry Company, New York Chicago · Cleveland · Washington · Huntington, W. Va. · St. Louis · Berwick, Pa. Pittsburgh · Philadelphia · San Francisco

MINE CARS

for Greater Mining Efficiency



Helps you get out better big lump coal

"Monobel" AA—developed by Du Pont Explosives research—quickly made an enviable name for itself. Sales records prove that it has become today's most preferred permissible. That's because it is a reliable producer of profitable, big lump coal.

The slow heaving action of "Monobel" AA puts lump coal where mechanical loaders can get at it easily. It's a water-resistant permissible that does an efficient job of blasting even where extremely wet conditions are encountered. Ideal for high, hard-shooting seams, rock or slate work. Shears ribs and face remarkably clean. Fumes are excellent.

Try "Monobel" AA. Chances are you'll agree that it's an able helper for getting out more big lump coal of the best possible quality. Any Du Pont Explosives representative will gladly tell you about this popular permissible.

E. I. DU PONT DE NEMOURS & CO. (INC.)

EXPLOSIVES DEPARTMENT

WILMINGTON 98, DELAWARE

DU PONT PERMISSIBLES

BLASTING SUPPLIES AND ACCESSORIES

Other Widely Used Du Pont Permissibles

"LUMP COAL" C

Well-known for its heaving action, this permissible pushes the coal well away from the face to give good loadability. A runner-up in popularity.

"GELOBEL" C

Here's a high velocity gelatinous permissible with excellent water-resistance—a great favorite in many wet mines. Does a marvelous job in rock and slate and is especially recommended if water is a serious problem.

DU PONT "NITRAMON" . . . ideal for stripping operations

because it is the safest blasting agent.
"Nitramon" cannot be detonated with blasting caps, rifle bullets, friction or by the impact of falling objects. Yet... it is readily fired with "Nitramon" Primer... Non-headache producing... packed in watertight metal cans so it may safely be loaded far in advance of firing time. If you're on a stripping job, ask the Du Pont man for complete information about "Nitramon."

Be sure to visit the Du Pont Exhibit (Booths A-325, A-331, A-333, A-335) at the 1949 Coal Show in Cleveland May 9-12

Listen to "Cavalcade of America" — Monday evenings — NBC

Reg. Limite Mark for



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

"Always a Flow of Lubricant" is One Reason for Long Life and Low Maintenance Cost of

EATON

AXLES

Positive lubrication of all vital parts—even at slowest speeds where gear-tooth loads are often highest—is an important factor in the outstanding long-life and low-maintenance cost record of Eaton 2-Speed Axles. In less than one revolution of the bevel gear, oil begins to flow to all moving parts, and the supply is automatically adjusted to meet the demands of operating speed. This abundant lubrication of all gears and bearings reduces friction and wear with consequent longer axle life and lower upkeep cost. Eaton 2-Speed Axles are available for most trucks of the 1½-ton class and larger. See your truck dealer for complete information.

More Than a Million Eaton 2-Speed Axles in Trucks Today



Axle Division

EATON MANUFACTURING COMPANY
CLEVELAND, OHIO



ALL OF PRODUCTS

NAME AND ADDRESS OF THE PARTY OF THE PARTY AND A STREET ASSESSMENT OF THE PARTY OF

The all-electric ... self-propelled

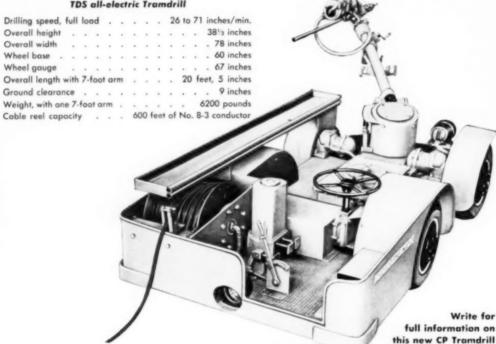
CP One-Man Permissible Tramdrill for trackless mines

Drilling, tramming, and cable reel — all are powered by electric motors on the CP One-Man Permissible Todal Mobile . . . easy to open in contact the contact of the contact except sandstone.

Definitely a one-man drill, the electrically powered CP Drill Arm has all controls at the end of the arm, within easy reach of operator. Safety interlocking switch cuts off electric drill motors while tramming; prevents tramming while drilling.

CP Tramdrill complies with all requirements of U.S. Bureau of Mines and carries Bureau's permissible name plate No. 2-641 for operation on 250-volt D.C. power; No. 2-641A on 500-volt D.C.

SPECIFICATIONS TDS all-electric Tramdrill

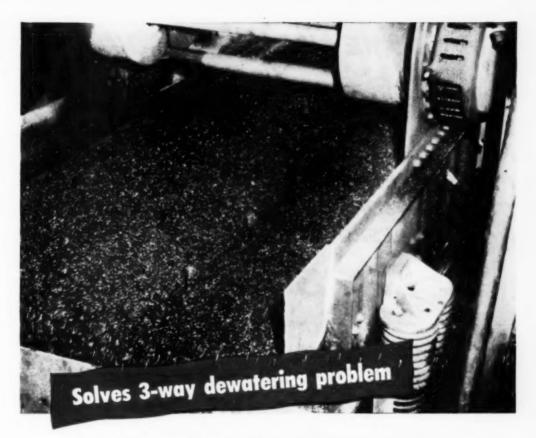


Booth 622

Public Auditorium Cleveland May 9-12



HAND HELD AND POST-MOUNTED ELECTRIC COAL DRILLS . ELECTRIC DRILL ARMS ELECTRIC TOOLS . PNEUMATIC TOOLS . AIR COMPRESSORS . ROCK DRILLS



Leading coal company reduces ash content, increases salable tonnage, reduces road hazards

The Philadelphia & Reading Coal & Iron Co. solved three troublesome problems with two Robins Eliptex Dewaterizers.

First—to remove —‰" pyrites and other ash-forming substances from No. 5 anthracite. Feeding this coal very wet (400 gals. of water per minute to 40 tons of coal per hour) to one Eliptex Dewaterizer, they simultaneously produce low-ash coal and effectively dewater that coal.

Second—to reclaim fines from washed No. 4 anthracite. Another Robins Eliptex Dewaterizer not only removes a high percentage of the surface moisture but salvages some 125 tons per hour of salable fines. Third—to eliminate winter highway hazards. The Robins Eliptex Dewaterizers do such a thorough dewatering job that there are no trails of ice-forming drippings from trucks loaded at the Philadelphia & Reading breaker.

Many breaker and tipple operators report the Eliptex Dewaterizer far more effective than devices costing ten times as much. What is more, this low initial cost is matched by low operating cost, low maintenance cost.

Send today for Bulletin 129. Robins Conveyors Division, 270 Passaic Avenue, Passaic, New Jersey. ROBINS

ELIPTEX
DEWATERIZER

SEE THIS DEWATERIZER

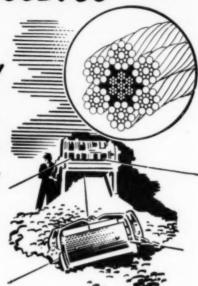
at the Cleveland Coal Show HEWITT-ROBINS Exhibits Nos. A-200, A-214, A-218, A-220

ROBINS CONVEYORS DIVISION HEWITT-ROBINS INCORPORATED



SOME ROPES FOOL YOU

U-W 6×19 SEALE IS AN EXCELLENT CONSTRUCTION FOR SLUSHER OR SCRAPER PULL ROPES BECAUSE IT HAS VERY COARSE OUTER WIRES TO RESIST ABRASION



BUT ... 3

FOR MINE SHAFT ROPES
U-W 6×19 FILLER WIRE IS
BETTER BECAUSE IT IS MORE
FLEXIBLE AND RESISTS FATIGUE
EXCEPTIONALLY WELL.

For longest and best service, always specify U-W LAYRITE (Preformed) IMPROVED PLOW STEEL

We invite you to let UPSON-WALTON engineer your tough rope jobs,

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THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks, Brattice Cloth

Main Offices and Factory: Cleveland 13. Ohio

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Get the facts in Cleveland!

You are cordially invited to visit Booth Nos. 1362-64
at the Cleveland Coal Exposition, May 9-12
to inspect the latest developments in
Roto-Clone Dust Control Equipment and
Cycoil Air Cleaners

AMERICAN AIR FILTER COMPANY, INC.
267 Central Avenue, Louisville 8, Ky.
In Canadas Darling Bross, Ltd., Montreal, P. Q.



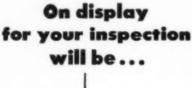
TYPE N ROTO-CLONE

A full scale operating model will be available for inspection. It will be a Unit No. 8 of 8000 CFM capacity showing in complete detail the principle of hydro-static precipitation. See for yourself how the Type N, which recycles its own water, cleans dust-laden air without the aid of a single moving part.



TYPE W ROTO-CLONE

Here's an apportunity to inspect a cut-away section of the famous Type W Roto-Clane. It will be a Model No. 8 of 1500 CFM capacity, equipped with automatic sludge ejector. This dynamic precipitate combines the dual function of exhauster and separater and with the addition of water sprays affers the highest efficiency in the collection of fine dust porticles.





CYCOIL OIL BATH CLEANER

A full scale No. 12 WO Cycoil Oil Bath Cleaner will be in operation. It is constructed throughout of plastic, permitting you to see how this unit provides 4 stages of cleaning. Designed for compressor and engine service, Cycoil delivers practically 100% dust removal efficiency in addition to serving as an intake silencer.



AAL

ROTO-CLONE®

DUST CONTROL EQUIPMENT



7 Tough Tests prove these YELLOW JACKET Cables are safe

IN THE LABORATORY United States Rubber Company scientists developed a special, tough, pressure cured Neoprene jacket, which provides maximum resistance to abrasion, cutting, heat, moisture, and especially oil. In addition, U. S. Royals must pass 7 grueling "torture" tests before being certified as safe for your toughest jobs. Write Electrical Wire and Cable Department, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.



Available in black or the new gold



U.S.RUBBER
SERVING THROUGH SCIENCE
Ballot Company

U. S. ROYAL GOLD MINING MACHINE AND LOCOMOTIVE CABLES

See Allis-Chalmers Products at Coal Show



A full-size 6 by 16 ft single deck Low-Head vibrating screen with reverse end-tension deck... the coal screen designed for high dewatering efficiency. Allis-Chalmers deck arrangement turns fine coal over repeatedly, assuring free drainage and eliminating a closely packed bed with fines on bottom and coarse coal on top.



5 by 12 ft Ripl-Flo vibrating screen — the screen that gives you high capacity for sizing egg, range, stoker grades. Available in heavy-duty construction for screening ROM coal in sizes up to 22 in. Has only two bearings — less weight, maintenance, power requirement. Sizes 3 by 6 to 6 by 16 ft.



The CW Solids-Handling pump — designed by Allis-Chalmers especially for coal washing! CW pump has only five working parts which can be removed easily. Handles slurries, tailings, sludges having up to 40% solids in suspension. Allisite parts give high abrasion resistance. 175 to 8,000 gpm; heads to 140 ft.

Low Head, Ripl Flo, Texrope, Afficite are Affic Chalmers trademarks



New Car-Shaker for emptying coal from all sizes of hopper bottom cars quickly and safely. Shaker body is "stress-relieved" for uniform strength. Vibrating mechanism is eccentric shaft mounted in large lubricated bearings and driven by 15 hp motor and Texrope drive inside shaker body.

ALLIS-CHALMERS, 968A SO. 70 ST.

OTHER ALLIS-CHALMERS PRODUCTS FOR COAL ...

Texrope V-belt drives . . . Electric Motors and Gearmotors . . . Multistage Mine Pumps . . . Transformers . . . Mobile Unit Substations . . . Complete line of Power Generation, Distribution and Control Equipment.

ALLIS-CHALMERS



A-267Q

Mine gets better lubrication, saves money

with

Gulf Mining Machine Lubricant B



The cutting machine lubricant formerly used by this mine did not resist washout by the large volume of water applied to control dust. As a result, large quantities of lubricant were lost and there was constant danger of burning out bearings and injuring expensive gears.

With Gulf Mining Machine Lubricant B this problem was eliminated. This outstanding lubricant resists the washing action of water-stays where it is put. It saves time, fewer applications are necessary; saves money in reduced lubricant consumption; and provides better

Call in a Gulf Lubrication Engineer today and ask him to demonstrate the many advantages of Gulf Mining Machine Lubricant B for your machines. He will show you how it can effectively help you make important savings in maintenance costs-and at the same time simplify lubricant storage and handling by reducing the number of lubricants needed.



Gulf Oil Corporation · Gulf Refining Company Pittsburgh · Atlanta · New Orleans · Houston · Louisville · Toledo

Division Sales Offices: Boston - New York - Philadelphia

Coal Facts #3

.. A ONE MINUTE QUIZ ... FOR MEN IN THE COAL INDUSTRY



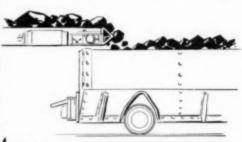
1. Has the use of coal by civilized people ever been banned by law?



2. Prior to the Revolutionary War, where did the American settlers get the bulk of their coal?



3. Which was the first country to begin the systematic mining of coal?



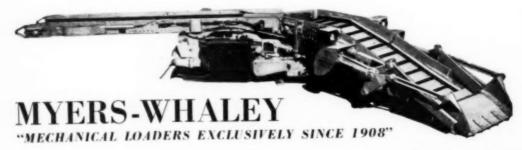
4:Which mechanical loader uses only 1/5 K.W.H. per ton of material loaded?

Answers:

Yes, on several occasions. In the reign of Edward I
of England, coal smoke was considered a serious
health menace and a law was passed making the burning of coal, in the city of London, a capital offense. During
the reign of Henry II of France, Smiths were heavily fined
for burning coal unless they had a special license.

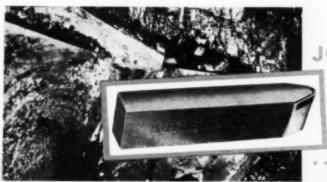
Despite the rich deposits of coal at their very doorsteps, early American settlers had most of their coal shipped across the Atlantic from Welsh mines. The Revolutionary War cut off this supply and forced the development of American mines. 3. England, the first nation to take full advantage of its coal deposits, began the systematic mining of coal in 1180, but it was used in considerable quantities as early as 832.

The Whaley "Automat" uses only 1/5 K.W.H. per ton of material loaded, the lowest power requirement of any loader of equal capacity. This low power requirement is possible because the "Automat" is perfectly balanced and free of dragging or scraping parts. A single motor of only 25 H.P. capacity is all the power required for its operation. In addition to tremendous power savings, the "Automat" is versatile. Being a fast and dependable coal loader, the "Automat" is in a class by itself in the rapid development of entries, cleaning up caved areas, making grades and handling other heavy rock work. Myers-Whaley, Knexville 6, Tennessee.



JOY EQUIPMENT

that is indispensable with the
CONTINUOUS MINER, or any team of JOY CUTTERS
and LOADERS, for maximum tonnage at
lowest cost per ton!



JOY SULMET BITS

Tungsten-Carbide tipped for faster cutting with less power consumption and fewer bit changes.



JOY SHUTTLE CARS

Fast-tramming and highly maneuverable, built in a complete range of sizes and types to meet any requirement.



JOY BELT CONVEYORS

Equipped with sealed-forlife bearings... the main haulage system that moves out most coal at least cost.

Write for Bulletins, or Consults a goy Engineer.

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING . PITTSBURGH 22. PA.

IN CANADA JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

(16 Etito)

NEOPRENE JACKETED ... LEAD MOLDED

INSULATED WITH HEAT-RESISTANT RUBBER...FOR 75°C OPERATION



You can always depend on these superior cables to be on the job when you need them for they are especially manufactured for hard and continuous service. Highly resistant to acidulous mine waters, abrasion, and fire—Rome 60 Mine Cables are the product of modern research and careful manufacturing methods.

Rome Cable engineering has consistently anticipated the problems of mine mechanization. Its sole purpose has been to design, by constant improvement, the best possible cables for mine use. For instance, before resistance to flame became a requirement by law, Rome 60 was being made with protective Neoprene sheaths. Again, the grounding requirements of Federal Bureau of Mines, Schedule 2E, found Rome 60 already offering adequate ground wire constructions. Now, the adoption of special heat-resistant insulating compound provides further improvement . . . continuous operation at copper temperatures up to 75° C. This means higher rated current carrying capacities and greater overload protection.

Translation of research developments into modern production methods and equipment by skilled workers under careful supervision without question makes Rome 60 today's outstanding mine cable value.

You can specify Rome 60 mine cables with assurance of long and dependable service . . . with Safety.

SEE BOOTH NO. 309 AT THE COAL CONVENTION AND EXPOSITION . CLEVELAND, MAY 9th to 12th

LOOK FOR APPRO. No. P-105 MOLDED IN THE NEOPRENE JACKET



MINE CABLES TAKE NO HOLIDAYS









ROME 60 SINGLE CONDUCTOR LOCO-MOTIVE GATHERING CABLE-600 VOLTS

Recommended for electric mine locomotives of the gathering reel type. Here is a single conductor cable stranded for extreme flexibility, of small diameter, and with strong adhesion between the insulated conductor and outer jacket.

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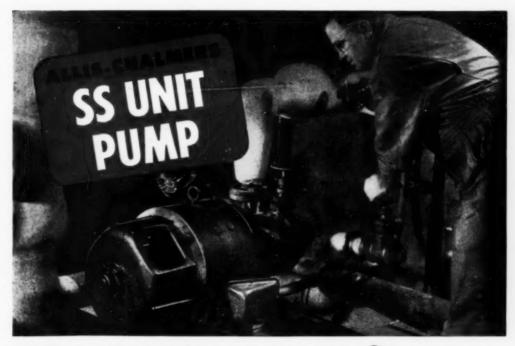
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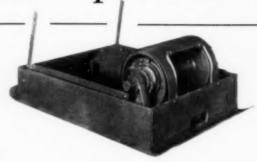
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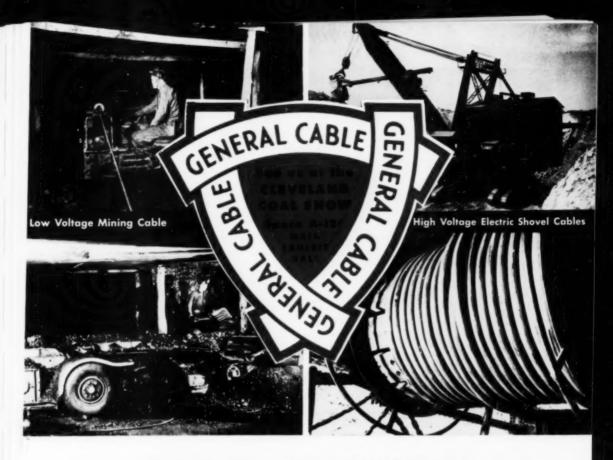


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MAY, 1949

IVAN A. GIVEN, EDITOR

Continuing Problem

WHETHER the new 1949 wage agreements will reflect an improvement in negotiating technique and consequently will be more workable and constructive still is a guess. Demands on the operators have been growing in severity and scope over the years, while the power of the union to make them stick has been made practically unlimited, subject only to the Taft-Hartley Act at the present time and eventually, perhaps, to the pressure of public opinion. A further possibility is a change in miner attitude, although it is by no means imminent at the moment. Neverthless it is a possibility.

Even if there were a complete change in governmental and legislative outlook, including repeal of the Wagner Act and supplementary statutes, would the situation in the coal-mining industry be radically changed? The answer is "No," unless public opinion can be altered and the miners, in particular, can be induced to change their thinking about relations with management. As long as the miners follow their officials unquestioningly and in a body, and the public is not inclined to dispute their course, the operators must continue to reckon with a force that is real and effective.

It can be taken as a fact, therefore, that 1949, whatever may transpire, will not bring an end to the need for determined effort toward achieving a better basis for relations not only with the union as a union but also with employees as individuals. If expected demands for greater control over industry operations, higher wages, shorter hours and increased welfare payments are not won in 1949, it can be assumed that they will be put forward, with added starters, again in 1950. The problem is difficult and will remain so. No magic formula will provide the answer. Greater stress on work with the public and the miners along already established lines is one part of the solution. A second is improving the contract-negoti-

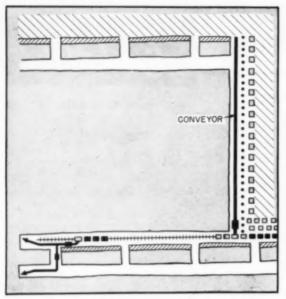
ating set-up—a step being increasingly considered in recent months.

Mr. Lewis again threw down the gage when he declared on March 24 that "We will not retreat. We will advance." But if forward steps are to return the maximum in benefits, they must reflect the best judgment of all the parties involved. This means that management should have a voice in the proceedings and, further, that the negotiating set-up, in all its phases, should be designed to make that voice effective. That goal will be achieved only by concentrated and continued effort.

New Support

THE ROLE OF MANAGEMENT in industry and the economy of the country was never, perhaps, brought out more vividly than in the March 1 statement of four veteran employees explaining why they were unable to accept a gift of the Colorado Springs Co. mine (April Coal Age, p. 146). They concluded that obtaining capital, finding good men and getting the work done efficiently—all normal management tasks—were too much for them, particularly in the light of the difficulties posed by prevailing governmental policy.

Engrossed as it is in the problems these four men found beyond their powers, management, perhaps, is inclined to pass over too lightly the vital part it plays in promoting the well-being of the country. This unexpected tribute, therefore, might well serve as the signal for a re-appraisal by management of its functions and how it might better carry them out. Certainly, it should give management new courage, and certainly, also, it should lead to greater concentration on getting the facts about what management does to all those who might be inclined to attack it through ignorance of its functions, whether they be employees, legislators, government officials or the public.



CUTTER

FIG. I—CONTINUOUS SEMI-LONGWALL with hand-loading onto face conveyor and crib and timber supports for roof control.

FIG. 2—FIRST APPLICATION OF LOADER in semi-longwall work—intermittent type—using mine cars.

Methods for Future Mining

Major Road to Higher Efficiency and Lower Cost Is Raising Miner or Loader Productivity—Wall Work Offers the Maximum in Continuous Loading—What Wall Work Is, What the Problems Are and What It Offers

IS IT POSSIBLE for the coalmining industry of the United States to profit by a change from the old-reliable room-and-pillar system of mining? True, room-andpillar has served the industry long and well and should not lightly be relinquished. Nevertheless, its manifest advantages are accompanied by at least one big disadvantage which looms larger and larger as wage and other costs increase and higher efficiency consequently becomes more vital.

What does room-and-pillar offer? In the final analysis, its major advantage lies in easier control of the roof. By this is meant the main roof, not the relatively thin top usually found directly over the coal and which normally requires temporary support regardless of the measures taken to hold the main roof. Solid coal is the best for all roof supports and by adjusting the size of pillars and the way in which they are recovered—assuming they are recovered—it is possible to hold the main roof permanently in place or control breaking and caving with a minimum of auxiliary support and little or no interruption of mining.

What are the drawbacks to roomand-pillar from the operating standpoint? The major one is that continuous production is difficult or impossible if pillars are recovered and also may be difficult or impossible if they are not. Crosscutting is required in any event and if the pillars are mined it is necessary to stop and shift equipment to a new point of attack each time a section of a pillar is taken out. Consequently, the productive time of both men and equipment is reduced, thereby limiting the efficiency, in terms of tons per man and per dollar of wage cost, that may be achieved.

The foregoing is true regardless of the type of equipment employed, although its importance has been obscured in the past by the fact that the other delays involved in the cutting, drilling, shooting and moving cycle have bulked much larger and naturally have been the object of major attention. But the delays which are inherent in the room-and-pillar system, because it is necessary to keep shifting to new places, nevertheless are a real brake on efficiency. Only by eliminating them through changing the system can the ultimate in continuity of operation and efficiency be achieved.

The alternatives to room-andpillar are full or semi-longwall. Full longwall, it will be recalled, is the system of mining whereby a continuous face, usually circular or approximately circular, is established and worked continuously either away from a center opening (advancing) or back to said opening (retreating).

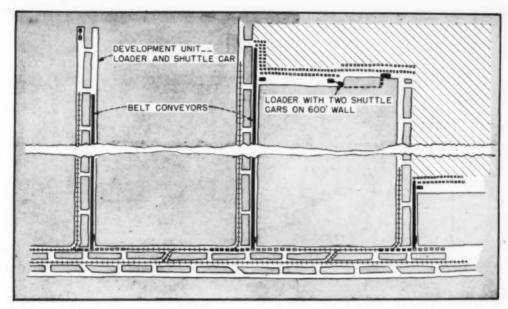


FIG. 3—HOW SEMI-LONGWALL MIGHT BE WORKED with loading machines, shuttle cars and mother belts to achieve a major increase in tons per man. Instead of cribs and timber, a thin rib, cut through at intervals, might be substituted, as in Fig. 5.

In full longwall, the roof normally is supported and permitted to subside a limited distance (usually one-fourth to one-third the seam thickness) by building packwalls of roof or floor material or material brought into the mine for the purpose. An alternative is filling the mined area completely by flushing, blowing or mechanical filling with a packing material. This is commonly termed "stowing." Both packwalls and stowing are common in Great Britain and on the Continent, Packwalls are employed in the few longwall mines in the United States. Some stowing is done or planned at certain operations, particularly in the anthracite region.

Packwalls or stowing naturally are expensive and for that reason are little used in the United States. However, a mine price sufficiently high, as in the anthracite region, can make such practices economically sound, especially if the recovery is materially increased. Experience over the years apparently is to the effect that conventional posts and jacks cannot be substituted for packing and filling in full longwall in most operations, thus forestalling possibly more economical roof control. And, since the cost of support is materially reduced by roomand-pillar, which also is simpler in many respects, full longwall has

never been an important factor in United States coal mining.

Semi-longwall is the second major alternative to room-and-pillar. This designation is applied to mining plans under which a wall of varying length is established between two entries or other openings. In addition to straight walls, semi-longwall plans include the V, half-V and similar systems.

Semi-Longwall Advantageous

Semi-longwall has the advantage of providing a place where mining can be done straight away and as nearly continuously as possible. It has the possible disadvantage of posing, under certain conditions, a more-ticklish roof-control problem. The word "possible" in the preceding sentence should be noted. since there seems to be real reason for believing the past difficulties have grown out of (a) the fact that semi-longwall is different and mining men therefore have been reluctant to devote to it the time and thought necessary to make it succeed, especially since room-andpillar was relatively simple and provided fairly good results; (b) lack of knowledge of the behavior of mine roofs under semi-longwall conditions; and (c) lack of a lowcost artificial roof support or supports providing the requisite strength and protection with ease of installation and moving.

In spite of these and other possible disadvantages, a fair amount of semi-longwall mining has been done in the United States—some with considerable success using conventional equipment and usual timbering materials. Fig. 1 is typical of plans using either chain or shaker conveyors—occasionally with loading machines but normally with hand loading. Where conveyors are used, maximum length of the face normally is not more than 300 ft. Obviously, the work can be done retreating as well as advancing.

If the roof can be controlled, it is of course better to advance or retreat the face without interruption. However, to cope with worse-thannormal top, or as a further precaution against trouble with the main roof, so-called "intermittent" semilongwall has been used in a number of mines. One general system is advancing or retreating a face, say, 100 or 150 ft. Then, leaving a pillar, a new opening is driven across the coal block to form a new wall, which again is worked the set distance.

Another form of semi-longwall is shown in Fig. 2. This plan was the result of the first attempt to use crawler loaders on walls with track

Semi-Longwall Plans Feature Continuous Operation and High Recovery

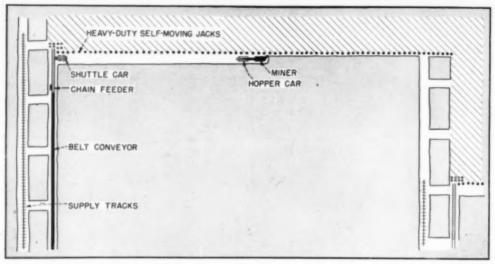


FIG. 4—HEAVY-DUTY SELF-MOVING JACKS provide roof support in this suggested semi-longwall plan for mining-and-loading machines.

and mine cars—an attempt marked, incidentally, with a considerable degree of success.

In addition to the ever-present problem of roof control, early semi-longwall mining involved substantial cost and loss of time in moving conveyors or shifting track. Both these drawbacks were enhanced if it was necessary to employ an intermittent plan. Also, if machine loading was desired, the capacity of the loader was more or less limited by the fact that conveyors big enough to handle the output of a high-capacity machine were too heavy for easy moving.

The shuttle car, however, eliminates track or conveyor shifting and, if more than one is employed, can handle the capacity of the largest machine in use today. Consequently, if other problems can be solved, it should make semi-longwall much more attractive.

How semi-longwall might be worked with shuttle cars is shown in Fig. 3. Faces approximately 600 ft. long would be established by driving up double-heading entries, one heading for a mother belt and the other for a supply track. To cut and drill at the rate necessary, high-capacity mounted equipment might be necessary.

With 5-ft, coal cut 8 ft, deep, a wall 600 ft, long, including chain pillars, would produce approximately 960 tons. Loading machines available for use in coal of this thickness could easily maintain a rate of at least 4 tons per minute or substantially higher. But assuming 4 tons per minute, 1½ hours for travel and lunch and an hour for delays, moving and other non-productive time, the unit could produce regularly 1,380 tons in an eight-hour shift.

High Output Per Man Results

Allowing for extra care and time in timbering, the crew for such a unit might be made up as follows: loader operator and helper, two shuttle-car operators, two drillers and a shotfirer working together, five timbermen, two supply and utility men, an electrician, two men loading and shifting cars, and a foreman, or a total of 20, making the output per man-shift 69 tons. What happens is that non-productive loader time—a substantial part of which is moving-is cut from as much as two-thirds of the available working time to, in this example, less than 15 percent.

Where mining-and-loading machines are used and complete or nearly complete extraction is required, semi-longwall offers the same advantages. In room mining with a mining-and-loading machine, the work would be done continuously and straight-away, except for the necessary crosscuts, and therefore there would be few interruptions for moving from place to place. When it came time to remove pillars, however, frequent shifts would be necessary.

Fig. 4 shows how a mining-and-

loading machine might work a 600-ft.-long wall open-ended, using a hopper car behind the machine and one or two shuttle cars to deliver the coal to a mother belt. Such a wall mined 16 ft. wide in 5-ft. coal would yield approximately 1,920 tons. With a mining rate of 2 tons per minute and allowing 1½ hours for travel and lunch and ½ hour for delays, the machine would produce 750 tons per shift and would complete the wall in about 2½ shifts.

Crew size would reflect the need for timbering, supplies and labor for conveyor installation, extension and retraction, but normally the total should not exceed 10, making the output 75 tons per man-shift. An increase in the rate of output or a reduction in the number of men in the crew would increase performance accordingly. A number of units today are operated with as few as four men.

If the same machine was used in room-and-pillar work, an average of 11 moves would have to be made in mining 1,920 tons on the following basis: rooms 16 ft. wide and 300 ft. deep, with three crosscuts per room requiring three moves; pillars 34 ft. thick and mined openended with places 16 ft. wide, each place requiring a move with the possible exception of the first.

Including rearrangement of timbering, water lines, cables, and so on, it might be assumed that each move would require an average of 5 minutes, making the total for min-

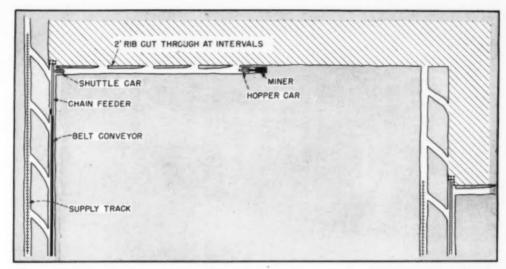


FIG. 5-THIN RIBS OF COAL, which may be cut through at intervals, are a possible alternative in supporting the roof in semi-longwall.

ing the equivalent of a 600-ft, wall 55 minutes. Increasing the time required to mine 1,920 tons by this total would reduce the cutput per man-shift, assuming the same 10man crew, to 70.1 tons compared to 75 with semi-longwall. A saving, therefore, would result-in this example, approximately 11/2c. per ton. This would be increased if, as might be quite feasible with semi-longwall, it was possible to save on labor for such items as timbering through simplification of the problem and the use of new timbering equipment. Obviously, of course, conditions at each particular operation would determine the savings that might be achieved as compared to the results under the conditions assumed for the examples used here.

Wall work, as previously pointed out, brings in new problems of roof control, including that of an artificial support sufficiently strong for the job as well as readily portable. Steps in that direction include the development of self-moving jacks with capacities of 80 tons or more and designed to yield slightly and relieve the pressure when the load exceeds that figure. Use of such equipment, plus the necessary attention to the problem of sufficient burden to assure proper caving, should go far toward eliminating previous difficulties with the top in semi-longwall. Since the weight of the burden is what provides the necessary breaking force, it should be sufficient to cope with any strong or thick roof members and thus

make it possible to get caving as desired, thus eliminating the hazards connected with large open areas behind the working face.

Recalling the old rule that coal in place is the best top holder of all, is it possible to make use of it to reduce the need for artificial support? One answer is to leave a thin rib between the wall and the gob. The rib may be solid or the machine may be gripped out to cut through it at intervals. The latter, incidentally, might simplify the ventilating problem.

Thin Rib Reduces Timbering

One form of semi-longwall with the rib cut through at intervals by gripping the machine is shown in Fig. 5. While the thickness of the rib necessary to hold the weight and yet crush down within a reasonable period of time to let the roof cave would be a matter of experiment at each property, the thickness would not be excessive. Therefore, recovery would not be too-adversely affected and might be more than offset by a reduction in timbering cost.

Mining-and-loading machines so far developed in the United States are designed for use in any type of mining-room-and-pillar, semilongwall, etc. In Great Britain and on the Continent, on the other hand, emphasis has been placed on machines suitable only for semi-longwall work, including the British cutter-loaders and the German coal

planers (Coal Age, June, 1947).

One British cutter-loader is produced in models suitable for use in thick veins and in coal as low as approximately 36 in. An early-type unit in one operation, according to published reports, normally could load out a 324-ft.-long face cut 51/2 ft. deep in 6 to 7 hours. With a seam thickness of approximately 4 ft. 9 in., output per man-shift was reported as 10.1 tons, all men on the crew, including those engaged in building packwalls. For men actually concerned with machine operation, including getting ready for and turning the machine around, tons per man was 27.9. In 3-ft. coal, according to the manufacturer, output per shift should be 260 tons and the productivity, men actually concerned with machine operation, around 19.9 tons per shift.

Whether machines such as these or others that may be especially developed can successfully compete with conveyors, especially conveyors with self-loading heads, operated on the modern face cycle yielding the maximum of continuity, is a question for the future where the thinner seams are concerned. Meantime, however, it is definite that semi-longwall offers real advantages with conventional loading, cutting and drilling equipment in the thicker veins, and will continue to offer much the same advantages with mining-and-loading equipment. Semi-longwall, therefore, merits really intensive study in the United States.



PRESENTLY THE LONGEST HIGHEST-LIFT unit in regular coal-mining service in the United States, the Storrs slope belt was made possible by using a cotton-nylon carcass for added strength.

Belt Slope Cuts Colliery Costs

Presently the Longest, Highest-Lift Unit in Regular Service, Storrs Slope Belt Cut Reopening Time and Substantially Reduced Haulage and Other Costs—Three Belt-Loading Stations Serve the Various Veins MADE POSSIBLE by advances in belt construction, a new belt slope at the Storrs colliery of the Moffat Coal Co., Scranton, Pa., has resulted in a substantial direct saving in transportation cost and is providing additional indirect savings through reducing the cost and





CHUTE AND FEEDER at the lower end of the slope belt handling Dunmore No. 3 coal at a maximum rate of 200 t.p.h. Output is tallied by an automatic conveyor weigher (right).



A STANDARD COTTON-PLY BELT handles the surface haul of 1,300 ft. from the slope belt to the tipple (right) and breaker.

speeding up the process of putting the colliery back into production.

With a center-to-center length of 2,600 ft., the Storrs slope conveyor, which went into operation Nov. 3, 1948, is presently the longest highest-lift unit in regular operation in the coal-mining industry. Two permanent and a third temporary loading points handle coal from various veins either now being worked or to be operated in the future. Coal from the bottom vein is delivered

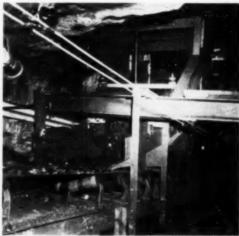
to the belt by retarding conveyors from working places up the pitch. On the surface, the slope belt discharges to an overland belt 1,300 ft. long on a 3-deg. downward pitch, which carries the coal to a tipple also handling shaft coal from certain veins.

Storrs colliery was originally a property of the Glen Alden Coal Co., which closed it in 1931. In 1942 it was leased by the Moffat organization, a partnership made up of the three Moffat brothers, Robert Y., W. K., and John. The work of reopening the property was started immediately and immediately, also, the new management ran into the transportation problem, which resolved itself into a choice between reopening along the lines of the original development or planning new openings to reduce long and expensive underground and surface hauls.

After careful study of the problem, a new belt slope was decided upon and the go-ahead signal was given by Mr. Robert Y. Moffat. From then on the project was carried on largely by the Moffat operating management, with design and consulting assistance from Walter L. Herold, Herold Mfg. Co., Scranton. The single-drum drive designed by Mr. Herold is the first to employ dual motors, speed reducers and roller chains for a single shaft. Earl W. Lamb, Moffat general manager, brought to the project, and to the general reopening work, experience gained in the development of the Harry Taylor mine of the Penn Anthracite Collieries Co., the first all-conveyor operation in the country. Various phases of the project were handled by Joseph Mitchell, colliery superintendent; Kelly Mataloni, mine foreman; Lester Keith, general outside superintendent (all construction); Charles Barclay, electrical engineer; Lee mechanical engineer; Burdick. E. H. Edwards, Alfred Greener and T. H. Couzens, mining engineers; and Roy Laurie (all surveys and transit work).



RETARDING CONVEYORS bring Dunmore No. 3 coel down the pitch to the transfer chute at the lower end of the slope belt.



NEW COUNTY LOADING STATION up the slope from the Dunmore. Rubber-cushioned idlers are used at all stations.

New 2,600-Ft. Storrs Slope Solves Seven-Vein-Haulage Problem





TWO 200-HP. MOTORS drive the slope belt through a single pulley and shaft. Separate chain drives are each large enough to carry the load for short time. The belt is stopped by magnetic brakes and is prevented from running back by the bell-locking backstop shown in the illustration at the right. An idler pulley provides for a 240-deg, belt wrap.

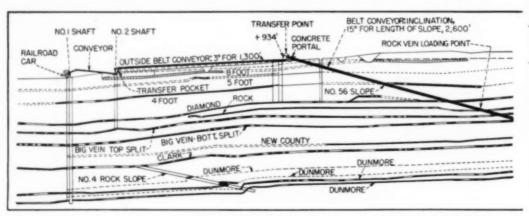
Located north of Scranton, Storrs colliery has available 12 veins and will produce from all of them. From the top down, the veins are: Eight-Foot, Five-Foot, Four-Foot, Diamond, Rock, Top Split-Big Vein, Vein. Bottom Split-Big County, Clark and Dunmore Nos. 1, 2 and 3. When the property was taken over by Moffat the Storrs section proper was served by the following openings: No. 1 shaft, 750 ft. deep; No. 2 shaft, 300 ft.; No. 3 shaft, 500 ft.; and No. 16 slope, 800 ft. long on 15 deg. Coal from Nos. 1 and 3 shafts and No. 16 slope was hauled either by mine car or chain conveyor to the breaker. Another section, known as Cayuga, was made an independent unit by the building of a run-of-mine tipple.

A big factor in deciding on a new belt slope as one of the main openings was the opportunity it provided for striking directly into one area of major production represented by the Dunmore No. 3 and adjacent veins, thereby eliminating what would have been a seven-stage transportation set-up, including a plane, a shaft, a slope and a rail haul on the surface. The distance would have been approximately 10,-000 ft., where the new slope and overland belt cut it to 4,000. The immediate saving is estimated at 50c, per ton of coal mined. In addition, the belt reduced by approximately three years the time that would have been required with conventional reopening, clean-up and development methods to get the

area it serves into coal production.

The new Storrs system is based on dividing the veins between one of the original shafts and the new belt slope. Initial steps, however, were electrification of all hoists and the sinking of one new slope. This new No. 55, or Bell Mountain slope, from the surface to the Dunmore No. 3 in the pitching area some 2,000 ft. south of the northerly outcrop, is 800 ft. long on 15 deg. Since it was to be used for coal only temporarily, it was equipped with two 26-in. underground-type mother belts with 75-hp, drives, which later were returned to regular underground service. Mine cars are not used at this opening.

Storrs No. 2 shaft was retained as a second major hoisting opening



STRIKING INTO THE HEART of a major producing area, the Storrs slope belt eliminated



SLOPE PROTECTION includes steel-and-concrete seals through old works such as this under which Kelly Mataloni, foreman, and Arthur Absalom, colliery electrician, are standing.

Both sides and top of the old openings are completely sealed off.

to handle coal from veins down to and including the Top Split of the Big Vein. Its capacity, originally 120 cars an hour, was comfortably doubled by installing a 7-ton skip. Loading facilities, in the Diamond vein, consist of a 50-ton hopper with air-operated skip-loading gates, plus a Phillips crossover dump. A 900-hp. motor was installed for hoisting.

Below the Top Split, the coal will be brought to the surface on the slope belt from two permanent loading stations—one in the Dunmore No. 3 and the second up the slope in the New County. A third temporary station farther up the slope in the Rock vein eventually will give way to locomotive haulage to No. 2 shaft. Installation of the skip in No. 2 shaft permitted converting No. 1 shaft, with a 300-hp. hoist, to a man-and-material opening, while installation of the belt permitted complete abandonment of No. 3 shaft and conversion of the new No. 55, or Bell Mountain, slope to a man-and-material status with a 75-hp. hoist. In addition, the old No. 16 slope was extended 400 ft. and made into the main supply opening with a 200-hp. hoist.

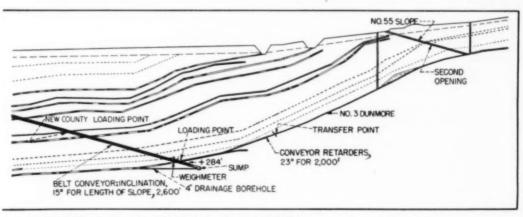
The belt slope also made locomotive haulage of the coal possible in the lower veins as well as in the upper, whereas, otherwise, slopes and planes would have been necessities. In other words, the haulage set-up is now such that, except for No. 2 shaft and slope belt and

auxiliary retarding conveyors, practically all transportation underground can be handled by locomotives and gathering beits.

The new belt slope, on a 15-deg. pitch, was sunk in two stages by Joseph Giovannini and Stewart Creasing, contractors. To provide ample headroom and clearance for both supply track and belt, it was made 14 ft. wide and 7 ft. high in the clear. Length is slightly over 2,600 ft. to a sump below the No. 3 Dunmore. From the sump the water is drained to the lower reaches of the No. 3, which act as the main mine sump, by a 4-in. borehole dipping slightly downward. Drilling was done by Sprague & Henwood.

The first stage in constructing the slope was sinking from the surface to the Rock vein. Next, a section was raised from the Top Split of the Big Vein to provide room for installing the hoist and other equipment. The final step was sinking to the No. 3 Dunmore. The contractors employed a Sullivan mucker and a hoist for handling the cars. Average advance was 7 ft. per day of one shift drilling and one shift mucking.

From the portal the slope was lined with concrete for a little over 300 ft. and a 4-in, vertical hole was drilled down to the Diamond vein to take care of water draining down from behind the lining. Below the concreted section the slope was timbered, where necessary, with 8-in. H-beams on 5-ft. centers. These beams were hitched into the ribs and concreted into place, with lagging over the top as required. Where the slope passed through old openings, they were completely sealed off, both sides and top, by concrete reinforced by steel beams,



what would have been a seven-step haulage set-up and cut distance 6,000 ft.

as shown in one of the accompanying illustrations.

The conveyor was fabricated in the Moffat shops, using new 5-in. idlers and also equipment from the Shasta Dam, both Chain-Belt with Timken bearings and pressure fittings for gun lubrication. The conveyor is paralleled in the slope by a 40-lb. man-and-supply track with a 100-hp. hoist.

Belt Lift Totals 643 Ft.

With a total lift of 643 ft., actual centers length of the conveyor is 2,600 ft., meaning that the belt length is one mile. Width of the belt is 36 in. and capacity at rated speed of 300 f.p.m. is 300 t.p.h. This required a belt tension of 38,000 lb., in turn necessitating special construction to make the job possible. After careful investigation the company chose a Ustex-Nylon belt, made by the U.S. Rubber Co. in its plant at Passaic, N. J. The seven plies are made of a combination of high-strength cotton and nylon fibers, which U. S. Rubber declares results in a belt 250 to 400 percent stronger than other belts of rubber and fabric construction. Thickness of the rubber on the top surface is 3/16 in.; on the bottom, 1/8 in.

The belt is driven through a 54-in.-diameter head pulley backed up by a 36-in. idler providing a 240-deg. wrap. Power is supplied by two 200-hp. Type MT-559 General Electric 2,300-volt 1,750-r.p.m. motors through 39.75:1 Western Gear reducers and Link-Belt chain drives to the pulley shaft. The chain drives were specified large enough so that one can carry the load for a short time in case of trouble with the other drive.

Each drive is equipped with a G.E. magnetic brake to bring the belt to a halt when a stop is made. Rollback is prevented by a Wonway BC-900 ball-locking backstop, which limits backward movement to practically zero.

For the surface haul to the rough cleaner, 1,300 ft. on a 3-deg. downgrade, the Moffat organization chose a standard 6-ply 36-oz.-duck belt, also 36 in. wide. The transfer from the slope belt to the surface belt is achieved by a chute and 48x60 Jeffrey-Traylor vibrating feeder. The chute is designed to provide a coal bed, which is maintained by varying the speed of the feeder.

Similar 42x60 feeders are used at the three underground belt-loading stations, two of which presently receive coal from cars and the third from a series of retarding conveyors. Mining consists of both pillar and solid work. Pillaring generally is done with chain and shaking conveyors to mine cars. This also is the rule in part of the solid work, but normally such work is done with chain and shaker units discharging to mother belts.

The retarding conveyors previously mentioned serve equipment working up the pitch in the Dunmore No. 3 vein and bring the coal down to the lowest belt-loading station. Eventually, this station will handle coal from Dunmore No. 1 and No. 2 in addition to No. 3, some being brought to it in mine cars but the majority by mother belts and the retarding chains. Three of the latter are in service at the present time, extending some 2,000 ft. up the pitch from the lower beltloading station. All three were built by Moffat. Drives are equipped with magnetic brakes. When loaded, the chains must be retarded by the drives. When empty, however, motor power is required to move them, even though the pitch varies from 12 to 35 deg. and averages 20 deg. on the lower, or main, retarder.

Belt Loaded at Three Stations

From the lower retarder, the coal goes into a chute, from which it is delivered to the belt by a vibrating feeder. A Merrick Weightometer is installed at the foot of the belt to weigh this particular portion of the coal, since mine cars are not used and, consequently, cannot be employed for weighing as in the other sections.

The next loading station up the belt—also permanent—receives coal in mine cars, which are handled in a Phillips crossover dump. Eventually, however, it is expected that some mother belts also will feed to this loading point, which will serve not only the New County but also the Clark and the Bottom Split of the Big Vein.

A third loading station in the Rock vein is a temporary one to be used until production from Nos. 1 and 2 stations reaches belt capacity. Like the New County station, it is equipped with a Phillips crossover dump for handling mine cars. Chain-Belt rubber-cushion idlers are installed at all loading stations for belt protection. In addition, the feeder throats are restricted so that a lump larger than 18 in. cannot come through. Also, as is customary, fingers on the feeder ends put the fines on the belt ahead of the lumps at all stations.

Operation of the belt is based on running at not over 300 t.p.h., which brought in the problem, with three separate feeding points, of preventing overloading while still making use of the maximum belt capacity. Automatic control equipment, consisting of a Westinghouse automatic regulator for coal conveyor with Flexopulse timer, was installed and placed in service Jan. 24, 1949, when coal was first loaded at all three points.

Control Equipment Extensive

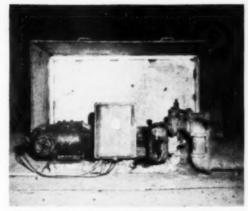
The Dunmore feeder was set to discharge a maximum of approximately 200 tons. Indicating lights were installed at the New County and Rock stations. These show green when the load on the belt is less than 244 h.p. (300 t.p.h.) and red when the belt is loaded to the prescribed capacity of 300 tons for its entire length.

The control equipment includes a load-limiting relay and auxiliary relays to control the coal feed at the New County and Rock stations. This load-limiting relay was calibrated and set to remain in its lower position while the load on the belt is less than 244 hp., or 300 t.p.h. on the entire length of the belt. In this position the green lights at the New County and Rock stations indicate that the belt is carrying less than capacity and that, therefore, coal can be loaded at these points.

When the load on the belt reaches 244 hp. (300 t.p.h.) the load-limiting relay automatically stops the New County and Rock feeders and locks them out. At the same time the red lights go on to indicate this condition to the attendants.

When the New County and Rock feeders stop, the load on the belt immediately begins to decrease because the Dunmore feeder rate is less than the maximum. When the belt load drops to 217 hp. (265 t.p.h.), the load-limiting relay releases the New County and Rock feeders and the green lights go on to indicate that loading may be resumed at these points.

Because of the distance from the main substation, installation of the belt and increased mining to the north were accompanied by the construction of an underground substation in the New County vein fed from the surface through a borehole. Transformers in the substation supply 440 volts a.c. to the feeders and other mining equipment, while an m.g. set generates the d.c. power for the locomotives.





AUTOMATIC PUMPING UNITS and seepage sumps in crosscuts slash maintenance costs by . . .

Keeping Haulageways Dry

A SHARP REDUCTION in track maintenance, along with the obvious advantages of a dry bottom on main-line haulageways, have been achieved by the installation of seepage sumps and automatic pumping units in mines of the Pittsburgh Coal Co., Library, Pa. Success of the installation stems from the fact that water travels quite freely along the bedding planes of the underlying fire clay, 5 to 6 ft. thick. Before standardization on this method of water handling, it was expensive and difficult to keep the bottom dry enough in many places to prevent working

of the ties, even though slag ballast was used.

The 6x6x6-ft. sumps located in crosscuts are filled entirely by seepage. The automatic pumping units consist of Labour Type DS Size 10 self-priming centrifugal pumps powered by direct-drive Westinghouse Type SK 2-hp. 555-volt d.c. motors equipped with contactor controls of the same manufacture. Pump operation is regulated by control circuits closed or opened by two electrodes in the sumps, one placed at the low-water level and the other at the high-water level.

A lift-off cover made of 3/16-in.

steel (shown open and closed) offers substantial mechanical protection and discourages tampering. In the Mathies mine, where these photographs were taken, the sumps are installed at 185 to 2,000 ft. intervals along sections of the main haulway and average 785 ft. apart.

The section of main-line loaded track illustrated is driven through old entries. Walls of 6x8x18-in. concrete blocks prevent spalling of coal and slate, which would continue to dirty the haulageway and cause maintenance expense. Roof supports are wide-flange-section 6½x8-in. H-beams weighing 25.4 lb. per foot.

The loaded tracks utilize 85-lb. rail placed on 7x9-in. by 7-ft. creosoted oak ties with a minimum of 6 in. of slag ballast. Weight of the rail on the empty tracks is 60 and 85 lb. Although on a portion of the haulageway (41/2 miles from the working sections to the tipple), rail joints are Thermit-welded, for the most part they are arc-welded. A base plate and back-up clips on each side under the head are used in arc welding, a method developed by Pittsburgh Coal and tested for flexing and strength in the Library shops before its adoption (Coal Age, November, 1945).

The seepage sumps and automatic pumping units were first placed in operation in 1944. Experience has proven them so valuable that Pittsburgh Coal now has such installations in five of its mines.



MAIN HAULAGEWAY rebuilt through old entries features seepage-sump drainage, creosoted oak ties, 85-lb. welded rail, concrete-block walls and steel roof beams.

Special Equipment and Loading Set-up Boost Duckbill Output



WHEN THE CUTTER has progressed about halfway across the face. POWER DUCKBILL in a 45-ft.-wide 300-ft.-long room, looking outby the duckbill waiting at the right will load the bugdust.



the face. The shakers deliver to 26-in, room-entry belts.



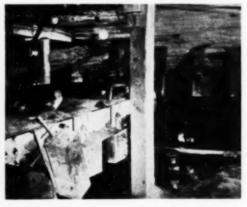
THE ENTIRE MINE OUTPUT is discharged from the 30-in. belt into mine cars equipped with special end boards that permit continuous loading without spillage with belt at full speed.



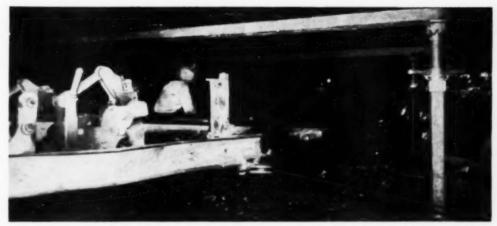
END BOARDS added to the mine cars are permanently installed. The master control board at the loading point controls power to all belts



ONE OF THREE power-duckbill shakers discharging to the 26-in. room-entry belt. A new mining plan will greatly reduce shaker moves.



THE 30-IN. PANEL Belt is shown receiving coal from a 26-in. roomentry belt for transportation to the car-loading point.



LOADING IN A ROOM at Reels Cove mine. With power duckbills, four-man face crews are producing an average of 22.5 tons per manshift in a 39-in, seam and have hit as high as 40 tons per man.

Power Duckbills at Reels Cove

Face Crews Average 22.5 Tons per Man and Achieve Peaks of 40 Tons in 39-In. Coal—Overlapping Cars and New Spotting-Hoist Set-up Enable Three Men per Shift to Load, Haul and Dump Entire Output

FROM A SEAM averaging 39 in., power duckbills are producing 22.5 tons per faceman, with peaks of 40, at the Reels Cove mine of the Tennessee Products & Chemical Corp., six miles from Whitwell, Tenn. Changes to mine-car bodies and a

new wrinkle in the operation of spotting hoists have enabled six men, including two boom operators, to handle, transport to the outside and dump 1,260 tons per day of two underground shifts.

Reels Cove, a draft operation 19

airline miles from Chattanooga, was opened in 1944 with a large investment in equipment, including retarding conveyors from the portal at an elevation of 1,750 ft. down to the railroad tracks at 830 ft. (Coal Age, March, 1946). Since that time, an office building has been erected, a permanent portal is nearing completion and considerable new underground equipment has been installed to cope with seam variations and recover coal as thin as 30 in.

The coal-mining property, which includes the adjoining Whitwell No.



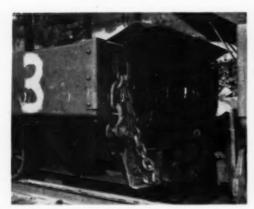
MODERN SURFACE FACILITIES at Reels Cove mine include substation, shop, bathhouse and a new office. With a 1,300-ton bin located at the headhouse, the tipple is operated only on one shift.

Haulage Facilities Designed for High Efficiency at Reels Cove





SINCE THE II.CAR TRIPS are kept permanently coupled, the outby end of the trip (left) has no end board and the inby end (right) has a longer one to lap over the straight end of the loaded trip as the empty trip is pulled into position.

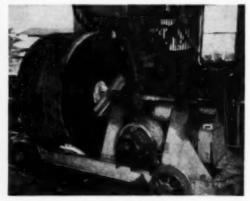




CHAIN ON CAR NO. 3 (left) is hooked to one of the pull ropes of the spotting hoists at the loading point. Each car is numbered for the convenience of the handling crew. Design of the end boards (right) permits hauling 5 tons in the 4½-ton-capacity cars.



LAYING TRACK at the new haulage-portal project, which includes a 3,400-ft. haul around the crop line.



SPECIAL CARRYING AND WINDING TRUCK was built in the mine shop to handle one 400-ft, roll of conveyor belting.

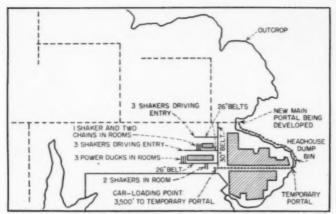


FIG. I—LAYOUT OF REELS COVE MINE. Broken lines indicate main and secondary entries for mining from the new portal.

LOOSE COAL

FIG. 2—THE DUCKBILL loads the fall in one sweep, taking the bugdust on the return.

I mine, is one of six properties held by the corporation, which is headed by Carl McFarlin, of Nashville, a technically trained mining engineer who has been connected with the coal industry of Alabama and Tennessee for many years. Other properties are the Alton Park plant, Chattanooga, making coke, city gas, coal tar, ammonium sulphate and benzol, and including a modern chemical plant for further processing of toluene, benzol and other derivatives of coal: the Rockwood plant, turning out ferro-manganese and pig iron; the Lyles Wrigley plant, which includes wood distillation, and turns out acetic acid, methanol, charcoal and charcoal pig iron; the Rockdale plant, making Tensulate mineral-wool insulation: a Nashville plant, producing min-eral wool; and the Southern Ferro Alloys Division, Chattanooga, producing ferro-silicon.

At Reels Cove, the Sewanee seam being mined lies near the top of the mountain, rises on a 0.7 percent grade from the portal and is devoid of local dips. Range of thickness is 6 to 60 in. The immediate top is a firm shale 5 to 35 ft. thick, and the bottom a fire clay which softens considerably when wet. Fortunately, however, the flow of water encountered has been so small that one 6x6-in. plunger pump running one shift is able to handle it. Methane has not been encountered.

Development and production coal from an area close to the temporary portal was hand-loaded onto chain conveyors and shakers, while the top rock on the haulway was loaded by a Whaley No. 3 Automat. A year ago three Goodman 277 power duckbills on G-20 shakers and three Goodman 512 shortwall cutters with bugdusters and 8½-ft. bars were installed. These were put into use driving 45-ft. rooms 300 ft. deep on 55-ft. centers, delivering to a 26-in. Ladel room-entry belt, which in turn discharges to a 30-in. Ladel panel belt hauling to the carloading point.

Fall Loaded in One Sweep

When the power duckbills were first placed in operation, the 45-ft. room faces were mined in two steps with one side one cut ahead of the other. That, however, involved too much non-productive shifting of the duckbill, cutting machine and roof jacks. Now the face is cut and the fall of coal loaded at one sween. The back swing of the duckbill from left to right and the resultant shifting of roof jacks are not wasted inasmuch as the windrow of bugdust is loaded out on this back swing. This loading of bugdust precedes the shooting.

Face timbering consists of three 2x6-in. crossbars 15 ft. long on each side, with an open center space of 10 ft. between jacks on each side. Another crossbar of the same size, but with the two jacks instead of three, is placed across the center space back of the other crossbars. Twenty Duff-Norton screw jacks are used per face. Permanent posts are set on 4-ft. centers each way.

Four men comprise a face crew and all are trained so that any one can operate the duckbill. To start a new cut, two of the men, using a hand-held drill, begin working ahead of the cutting machine to drill seven holes. The other two men operate the cutting machine, move up headers and set permanent posts. Each hole is charged with one 2-in. stick of Hercules Bituminite permissible. The five "center" holes are fired first and then the rib holes. This shooting practice gives superior results as compared to various methods tried.

The crew of four averages two cuts totaling 90 tons per shift, equivalent to 22.5 tons per man. However, a four-man crew working on the day shift on Jan. 7 loaded 3¾ cuts totaling 160 tons, or 40 tons per man.

Hydraulic Jacks Speed Moves

To save time in pulling the power ducks ahead and to avoid loosening the anchorage, which sometimes occurred while loading a cut, the original screw jacks of the units were replaced by hydraulic jacks. Now, the loosening and tightening of jacks is easy and a move can be made in 10 minutes instead of the 30 to 50 minutes it took with the original screw equipment. The capacity of each hydraulic jack is 30 tons. Because it is easy to get the hydraulic jacks much tighter than the screw jacks, they hold better. Further hydraulic-jack details are given on p. 114 of this issue.

A new mining plan was scheduled for trial with the power duckbills at the time this article was written. It is based on advancing four 45-ft. rooms abreast for 2,000 ft. to complete one side of a panel. This permits all moves of the shaker equipment to be straight ahead. The belt will be installed along the rib in one

Management and Methods Vital Factors in Reels Cove Operation



H. A. DAFFRON (left), superintendent, Reels Cove; end C. F. Rivers, general superintendent, Reels Cove and Whitwell No. I mines.



EDGAR HIXON (left), mine foreman, night shift; Archie Reeves, Dan Steele and Ralph Rankin, section foremen.

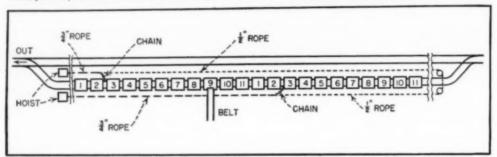


FIG. 3-TWO-HOIST car-sporting arrangement by which trips are changed without stopping the belt or other delay.

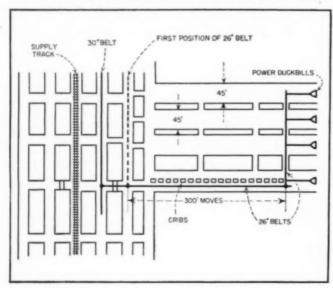


FIG. 4—PROPOSED PLAN to simplify and reduce the number of shaker-drive moves in mining a 300x2,000-ft. block constituting one side of a panel.

room of the panel and will be protected by a line of cribs. A cross or mother belt about 250 ft. long will be moved ahead every 250 ft.—at the same time the four shaker drives are shifted. This method will practically eliminate the panelentry development period and will cut the number of major moves per 2,000 ft. of belt from 72, with the present method of mining 36 rooms on each side of the entry, to 12.

A 30-in. belt carries the production from three panels to the carloading point on the temporary haulway. Two 11-car trips, 4½-ton Sanford-Day "Automatic" dropbottom cars, and one 8-ton locomotive haul the entire output from the one loading head 3,500 ft. to the portal, near which is the headhouse and 1,300-ton bin.

Sloping and overlapping end boards have been added to the mine cars so that, without the complication of a transfer chute or device at the end of the belt, there is no spillage as the trip is moved forward by the spotting hoist while



W. E. TURNER (left), Howard Hizon and W. D. Eakin, section foremen; Bob Reeves, mine foremen; Frank Holtcamp, section foremen; and Hugh Barker, chief electrician.

the belt is still delivering coal. In effect, therefore, the production of the mine is hauled by two 55-ton mine cars. The end boards are the same on all except the inby and outby cars of each trip. The free end of the outby car has no end board while the free end of the inby car has an extra-length board to lap over the outby car of the next trip. Capacity of the 4½-ton cars has been increased to a 5-ton average by the end boards.

Two Spotting Hoists Cut Delays

Two spotting hoists are used to eliminate the delay in returning the pull rope. The hooks on each 34-in. pull rope are connected by a 1/2-in. tail rope, which operates over tail sheaves installed near the inby switch of the runaround. Large numerals (1, 2, 3, etc.) are painted on the car sides facing the boom operator's station to enable him to tell at a glance which car of a trip is under the boom at any time. When one of the last two or three cars of a trip is under the boom and the other 11-car trip (empty) has been hooked to the first trip, the tail rope has automatically brought the hook of one hoist rope back to position for attaching to a short chain that hangs permanently from the outby end of Car No. 3.

The hoists, installed on each side of the track near the outby switch, are Brown-Fayro single-drum units with clutches. After the locomotive has pushed a trip of empties onto the loading track and the brakeman has coupled that trip to the loaded or loading trip, he stays there while the motorman takes his locomotive to the outby end of the runaroung.

The motorman then dismounts, and when he receives a signal from the brakeman that he has hooked a pull rope to Car No. 3, he disengages the clutch of one hoist and engages the clutch of the other.

By virtue of the overlapping cars and the two hoists with the connecting tail-rope arrangement, the boom man, motorman and brakeman do all the work connected with car loading, hauling and dumping. Six men handle the two shifts. The fact that belts and ducks are not stopped for car spotting or trip changing helps production directly in proportion to the total time saved, and indirectly because the facemen naturally would move away from their working positions when the shaker stopped.

Master Board Controls Belts

A master control board located at the boom station consists of a group of 275-volt double-pole fused safety switches, signal bell and indicating lights. One switch is a master unit controlling power to all the belts and other conveyors. Reversing belts for the transportation of men and materials is done with non-reversing Ohio Brass starters, which were revised at the mine by adding a Jeffrey locomotive transfer switch to each one. Control wires are carried to safety switches on the master control board.

Speed-control rheostats are part of the control equipment for each belt. The range for the 30-in. belt is 50 to 400 f.p.m., while that for the 26-in. belts is 50 to 250 f.p.m. The belt carrying coal from the power duckbills operates at 200 f.j.m. while the other 26-in. belts

are operated at 150 to 200 f.p.m.
Supplies are taken in on a third
or off shift. In addition to the foreman, six men are employed on that

or off shift. In addition to the foreman, six men are employed on that shift. Four are classed as supplymen and two as rock-dust men.

A variation of the dummy-panline method is used for moving pans and supplies to the face. Pans of the dummy line are not loaded with supplies and the dummy line is not pulled up as a unit as the face progresses. The handy man, using a cart operating on the pan lines, moves empty pans forward and bolts them loosely onto the front end of the dummy line until the room has reached its halfway mark. From then on, he disconnects pans from the rear end of the dummy line and carts them to the face to extend both lines. Posts, crossbars and supplies are carted on the dummy line for the most part while working the first half of the room and on the main pan line for the second half.

Conveyor belting is transported into the mine on a special truck built in the mine shop to accommodate one 400-ft. roll. Engaging the drive to reel the belt onto the truck is done by applying a roller chain onto the sprockets of the reel shaft and the worm gear reducer. The belt conveyors, all Ladel, are fitted with sealed-for-life ball bearings. At the car-loading point, coal dust is controlled by a water spray.

Outside Haul Constructed

The new and permanent portal project included a 3,400-ft. outside haul around the crop line. The track is 60-lb. steel laid on 6x8-in. creosoted oak ties with rock ballast. A fan and substation are the only structures at this portal. A shop, lamphouse, bathhouse and office are near the headhouse.

For several years after Reels Cove mine was opened the operating office was at No. 1 mine at Whitwell. That office has been replaced by a new building at Reels Cove, now the operating headquarters for both mines. C. F. Rivers is general superintendent for the company and H. A. Daffron superintendent of Reels Cove. Bob Reeves is mine foreman, and Hugh Barker chief electrician.

By virtue of the 1,300-ton bin at the headhouse, the tipple is operated but one shift. Although this four-track plant is equipped with a crusher and facilities to make a number of sizes, the output at present consists of $2\frac{1}{2}x0$, $2\frac{1}{2}x4$ egg and plus-4-in. block.

The 1949 Coal Show



S. M. CASSIDY Chairman, Coal Division



L. EBERSOLE GAINES National Chairman, Program Committee



J. H. FULFORD Chairman, Manufacturers' Division

FREE INTERCHANGE of ideas and alertness to the opportunities provided by new mining techniques and equipment have been life-savers for the coal-mining industry in the past. They will be no less important in the future. Coal men well know the benefits they have derived from past American Mining Congress conventions and expositions. I can confidently assure them of even greater benefits in 1949.

Since the war, both operators and manufacturers have been working hard to evolve new methods and new equipment for producing and preparing coal and thus maintain the industry's position in the fuel market. Important progress has been made all along the line. The results will be laid before the industry at Cleveland.

It is literally true that the exhibits and convention sessions constitute a coal-mining progress report lighting the road to a better future. Manufacturers have gone all out to bring to Cleveland their new machines, equipment and materials, as well as the old reliables that have been improved and modernized. Top-ranking executives, operating officials and engineers will lead the convention discussions, which will completely cover safer and more-efficient mining and preparation. Together, the exhibits and technical sessions will constitute a reservoir of ideas of inestimable value to the industry. The 1949

Coal Show is an event that should

Swainly

RECENT EVENTS have high-lighted the fact that we in the coal-mining industry are living in a momentous period. That fact has been given full weight by the committee charged with evolving the program for the nine technical sessions of the 1949 Coal Show of the American Mining Congress. The men on the committee have worked hard to prepare a program in tune with the times and I have no hesitancy in stating that the results of their efforts are well worth the careful attention of all coal-mining men.

Balance in the conduct of coalmining affairs requires consideration not only of the vital factors of cost and quality but also the equally important problems involved in relations with government, employees, consumers and the public. That balance is found in the Cleveland program, which includes, in addition to papers on all phases of the operation of deep and strip mines, discussion of taxes, future fuel supplies, trends in consumer demand, improving management-employee relations, management-employee responsibility for mine safety and attracting young men to coal mining.

Since each paper will be presented by a man or men eminently qualified in the subject and since full opportunity will be provided for discussion, the technical sessions, no less than the exhibits, will provide the basis for a new advance is coal mining. Time reserved for the technical sessions will be time well spent.

F Thurse Gaines

MANUFACTURERS equipment, materials and supplies for coal mining earnestly urge your attendance at this year's Coal Show in Cleveland. With some 223 organizations featuring everything needed for modern, efficient mining in a show 40 percent larger than the record-breaker of 1947, the coal man interested in cutting cost and raising the quality of his product will have an unparalleled opportunity for seeing and evaluating the latest contribution of the industry's co-partners in progress-the manufacturers.

I say "co-partners in progress" because the manufacturers over the years have been keenly appreciative of the cost and quality problems facing the coal-mining industry and have, as the record shows, worked unceasingly to help solve them. The 1949 show will demonstrate once again, in vivid fashion, how that real interest is being translated into new and modern equipment and materials for cutting mining cost and enhancing product quality.

The 1949 show will feature every type of machine, tool and supply item needed in coal mining. Most of these will be right on the floor for first-hand inspection. Operating characteristics and performance data, as well as application to particular conditions, may be discussed in full with the manufacturers' mining specialists. Here is a rare opportunity for every mining man. The manufacturers are prepared to help you make the most of it.

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not be missed.

Convention Program

MONDAY, MAY 9, 2 P.M.

TRACKLESS MINING

Methods of Belt-Conveyor Loading—A. R. Long, Clearfield Bituminous Coal Corp., chairman, and other members of the Coal Division Conveyor Committee, including: A. B. Crichton Jr., Johnstown Coal & Coke Co.; Robert Fletcher, J. H. Fletcher Co.; V. D. Hanson, Pittsburgh Coal Co.; and C. W. Thompson, Weirton Coal Co.

Tractors and Trailers for Supply Haulage—G. O. Tarleton, vice president, Consolidation Coal Co. (Ky.)

Continuous-Mining Symposium—Gerald von Stroh, director, Mining Development Committee, Bituminous Coal Research, Inc.; G. S. Jenkins, vice president, operations, Consolidated Coal Co.; J. J. Snure, Rochester & Pittsburgh Coal Co.; and C. H. Snyder, president, Sunnyhill Coal Co.

MAINTENANCE AND VENTILATION

Maintenance of Underground Equipment—W. F. Diamond, general superintendent, Marianna Smokeless Coal Co.

Maintenance of Preparation-Plant Equipment— H. D. Bowker, assistant general manager, West Virginia Coal & Coke Corp.

Auxiliary Ventilation—R. G. Heers, project manager, Kaiser Co., Inc.; and Ray Bowen, mining engineer, Geneva Steel Co.

TUESDAY, MAY 10, 10 A.M.

UTILIZATION AND MARKETING

National Fuel Reserves for Future Fuel Supplies
—Arno C. Fieldner, chief, Fuels and Explosives Division, U. S. Bureau of Mines.

Trends in Consumer Demand—George A. Lamb, manager, business surveys, Pittsburgh Consolidation Coal Co.

Depreciation Allowances in Relation to Capital Required for New Plants and Equipment—T. H. Bierce, assistant treasurer, Rochester & Pittsburgh Coal Co.

TUESDAY, MAY 10, 2:15 P.M.

FACE OPERATIONS

Cutting and Drilling With Tungsten-Carbide Bits— Carl A. Burgener, division engineer, Peabody Coal Co.

Methods of Breaking Down Coal at the Face— W. O. Smith, general superintendent, Luzerne-Graham Mining Corp.

Use and Care of Trailing Cables—C. C. Ballard, mechanical engineer, The New River Co., and E. W. Davis, chief electrical engineer, Simplex Wire & Cable Co.

STRIP MINING

Recent Developments in Overburden Drilling— Howard Frisbie, assistant superintendent, Broken Aro Coal Co.

Blasting in Open-Pit Mining: With Liquid Oxygen
—Don McCloud, Airmite-Midwest, Inc.; With Fixed
Explosives—A. B. Austin, Hercules Powder Co.

Deep Stripping Methods: With Tower Excavator— Harold Hicks, engineer, and Howard Truax, general superintendent, Truax-Traer Coal Co.; With Large Shovels—Andrew Hyslop Jr., chief engineer, and Russell McHugh, engineer in charge of stripping, Hanna Coal Co.; With Large Draglines—Arthur E. Dick, Jr., and Donald B. Dick, Dick Construction Co.

WEDNESDAY, MAY 11, 10 A.M.

SURFACE PREPARATION

Dewatering and Drying Coal: Methods and Equipment for Washed Coal—Orville Lyons, Battelle Memorial Institute; Heat Drying Raw Slack—J. C. Johnston, preparation engineer, Eastern Gas & Fuel Associates; Effect of Moisture on Surface Screening—William R. Caler, preparation engineer, Enos Coal Mining Co.

Dense-Media Separation Process—Harradon Randall, president, Rhoads Contracting Co., and Edgar Schweitzer, fuel engineer, Lehigh Valley Coal Co.

WEDNESDAY, MAY 11, 2:15 P.M.

UNDERGROUND HAULAGE

Locomotive Dispatching By Telephone and Radio—Frank Eubanks, superintendent, mechanical maintenance, Old Ben Coal Corp.

Latest Developments in Belt Haulage—Carel Robinson, consulting engineer, Robinson & Robinson.

Shafts Vs. Slopes for Hoisting-Paul Weir, president, Paul Weir Co.

STRIP MINING

Current Anthracite Stripping Practices—Charles E. Brown, mining engineer, Philadelphia & Reading Coal & Iron Co.

Contour Mapping by Aerial Photography—George Hess, photogrammetric engineer, Aero Service Corp.

Practices in Open-Pit Power Distribution—J. J. Huey, electrical engineer, United Electric Coal Cos., and David Stoetzel, application engineer, Mining Division, General Electric Co.

Stripped-Land Regeneration—A. G. Chapman, chief. Central States Forest Experiment Station.

STEEP-PITCH MINING

Round-Table Discussion—T. H. Wilson, general manager, Crow's Nest Coal Co., Ltd.; D. E. Ingersoll, Philadelphia & Reading Coal & Iron Co.; and others to be announced.

THURSDAY, MAY 12, 10 A.M.

MANAGEMENT

Management-Employee Responsibility for Mine Safety—Charles W. Connor, manager, Mining Division, Armco Steel Corp.

Attracting Young Men to the Coal Industry—Henry C. Woods, chairman of the board, Sahara Coal Co.

Improving Management-Employee Relations— Speaker to be announced.

SPECIAL EVENTS

Tuesday Evening, May 10—Coal Miners' Party. Thursday Evening, May 12—Annual banquet.

Coal-Show Exhibits

Acme Machinery Co.—Model 60 aircooled rubber-tired compressor, Model 105 rubber-tired and track-mounted compressors; mine stoper 23 in. in over-all length designed for drilling vertical holes in extremely close quarters. In charge—Matison Evans,

Afilberg Bearing Co.—Roller-bearing mine-car wheel and company line of standard and self-aligning ball bearings, ball-bearing pillow blocks and Bower tapered roller bearings. In charge—P. H. Staerk.

Allis-Chalmers Mfg. Co.—5x12-ft. Ripl-Flow double-deck screen in operation, 6x16-ft. Low-Head screen with dewatering deck cut away to show mechanism, and a 14x16-in. solids-handling pump exploded into its five main parts. NEW—Shaker for emptying coal and other granular material from hopper cars. In charge—J. E. Edelman.

American Air Filter Co., Inc.—Type N and Type W Roto-Clones, Cycoil oil-bath cleaner for filtering engine and compressor intake air. NEW—Dust collectors. In charge—John Kane.

American Brattice Cloth Corp.— Mine-Vent flexible tubing and ABC brattice cloth, with demonstrations of demountable couplings, various suspension methods and the flame resistance of brattice cloth. D. Blaine Mikesell.

American Car & Foundry Co.—43ft. 30-ton 8-wheel automatic drop-bottom mine equipped with automatic couplers, draft gears, roller side bearings, steel wheels with anti-friction bearings and hand-operated brake on rear truck; colored transparencies showing other types of ACF mine cars in service. F. J. Bogard.

American Chain & Cable Co., American Cable and Hazard Wire Rope Divisions.—Wire rope for underground and stripping use. W. W. Runkle:

American Cyanamid Co., Explosives Dept. and Mineral Dressing Division— Explosives, blasting accessories and equipment; coal-preparation products and processes. M. J. Wixson.

American Mine Door Co.—Track cleaners, including 1-t.p.h. model; automatic switch thrower, rock-dusting machine. Chas. Vignos and Glenn Gurney.

Albert & J. M. Anderson Mfg. Co.— NEW—Pow-R-Gard and Ground-Gard electric power-distribution equipment in dust-tight explosion-proof enclosures for either a.c. or d.c. portable mining machines, designed to furnish automatic protection from ground and

Based on reports received from the manufacturers as to their exhibition plans.

POST CONVENTION REPORT

AS A SERVICE TO READERS, COAL AGE, in its June issue, will present a complete report on the 1949 Coal Show—including digests of the papers and descriptions of the products displayed by manufacturers.

cable faults, short circuits, overloads,

Anaconda Wire & Cable Co.—Electric wire and cable. E. R. Luna.

Armco Drainage & Metal Products, Inc.—Corrugated-metal fan duct, Steelox metal fan house and tunnel and entry liner plate, plus Armco corrugated metal culverts, conveyor covers, ventilating duct and air-pressure pipe and coupling. W. H. Spindler.

Armstrong-Bray & Co.—Heavy and light-duty conveyor-belt splices, and items for repair of rips and tears in conveyor belts featuring the newly designed nuts used on Plategrip fasteners. Fred Bishop.

Atlas Powder Co.—NEW—Improved and Expanded Rockmaster millisecond-delay blasting system. John L. Romig.

Austin Powder Co.—Various augers and drill tools; dynamites, powders and permissible explosives. Neil Baker.

Baker-Raulang Co., Baker Industrial Truck Division—Type TJCX tractor, Type SB timbering machine, Type YA-36 Trike and Fletcher trailers, with demonstration of the timbering machine and Trike under simulated anine conditions. D. L. Darnell.

Barber-Greene Co.—B-G standard truss frame three-roll troughing carrier belt conveyor, plus a display of Kodachrome transparencies and photo-murals of the company's materials-handling equipment in underground use. NEW—Two sections of newly developed underground belt conveyors employing special channel or angle frames and low-backed carriers. R. W. Richardson.

Bearing Service Co.—All types of single-row, double-row, angular-contact and thrust ball bearings; cylindrical and spherical roller bearings; motor cartridge units designed to simplify changeover of stationary electric motors to anti-friction bearings; various other anti-friction units. Wm. F. Chase.

Bethlehem Steel Co.—Prefabricated mine track designed for individual installation, with a model demonstrating moving of various elements; sections of various steel mine ties; combination switch stand with reflector target; truck for a 10-ton eight-wheel mine car; hollow drill steel; wire rope with photographs of manufacturing operations and applications; large photos of these and other products. A. A. Warg.

Bird Machine Co.—Full-size Bird centrifugal filter for dewatering fine coal, with cutaway section and photographs of various installations. George Sherrerd.

Bituminous Coal Institute, Inc.— Wall panels pictorially illustrating various activities of the Institute. James H. Cunningham.

Bituminous Coal Research, Inc.— Smokeless residential-heating equipment, overfire jets for industrial smoke abatement and charts depicting various phases of BCR research. John W. Igoe.

Bixby-Zimmer Engineering Co.— 3x6-ft. vibrator equipped with Beezee screen cloth in operation with screen action shown by a stroboscopic light, plus standard sizes of recently developed screen for use in vibrators, shakers, stationary drag conveyors and centrifugal dryers.

Blackhawk Mfg. Co. — Standard products, including socket wrenches, hydraulic hand jacks from 1½- to 100-tons capacity; hydraulic maintenance equipment, such as hydraulic pipe benders; and hydraulic pumps, valves and controls. Phillip G. Brumder.

Bowdil Co.—Various standard products, plus a 9-ft. 10RU bar with chains and bits operating and protected by a transparent guard. Chas. L. Bowman.

Broderick & Bascom Rope Co.— Miniature wire-rope-making machines, including strander, fabricating a 1/16in.-diameter 19-wire strand, plus vertical closer forming six small strands of seven wires around a fibre core; Yellow Strand braided safety slings. Fred Zimmerman.

Brown-Fayro Co.—Mine gathering pumps, four-axle spring-bumper-equipped steel mine car, permissible tubing blowers, mine-car wheels, rerailers, derailers and coal-spray equipment. NEW—Heavy duty car-spotting hoist. Fred M. Davis and Murray W. Tuck.

Bucyrus-Erie Co. — Photographic murals and translite color photographs of large stripping excavators at work, including Models 1050-B, 1150-B, 550-B and others.

Buda Co.—Diesel engines for powering large-capacity trucks, including two 8-cylinder and one 6-cylinder units. H. H. Cohenour.

Carbit, Inc.-Carbide cutting and

drilling equipment for deep and strip mines in all sizes and specifications; regular and sectional-type augers and accessories. Henry E. Schweinsberg.

Cardox Corp.—Cardox coal-dislodging systems; Cardox-Hardsocg horizontal and vertical drills, Cardox-Hardsocg continuous rotary cutter with augers ranging from 20 to 48 in. in diameter for mining coal direct, drilling equipment for surface and underground drilling, and a full range of tungsten-carbide-tipped cutter heads. NEW—Self-propelled horizontal drill.

Caterpillar Tractor Co.—Caterpillar engines and track and wheel-type tractors, bulldozers and scrapers, plus such allied equipment as the Hyster Hystaway, Athey PD10Q rock trailer and Trackson T6 Traxcavator with coal bucket, NEW—500-hp. Caterpillar Diesel D397, the largest of four new engines recently introduced. C. E. Jones.

Centrifugal & Mechanical Industries, Inc.—Sound motion picture of C-M-I continuous certrifugal dryers in actual operation at different plants under varying conditions; also covering various stages of manufacture and engineering features. P. W. Bigley.

C. & D. Batteries, Inc.—Sylver-Clad battery, hardwood-tray battery assemblies, steel tray shuttle-car battery designs, hard-rubber Monobloc diesel batteries, explosion-proof auxiliary power batteries and the latest C & D Plasticell design of Monobloc plastic-container batteries for telephone and auxiliary power. A. L. Crothers and J. J. Green.

Chesapeake & Ohio Ry. Co.—Operating model of the world's largest single-unit locomotive, replica of the C. & O. 's "500"—the first coal-burning steam-turbine electric locomotive ever built.

Chicago Pneumatic Tool Co.—Handheld and post-mounted coal drills. NEW—Permissible Tramdrill in operation. L. J. Walker.

Cincinnati Mine Machinery Co.— Complete line of coal-cutting chains for all types of cutting machines, Duplex and Stanex bits, and enlarged photographs showing Cincinnati chains, bits and cutterbars in service. A. O. Burestle and John R. Cartlidge.

Cities Service Oil Co.—Display depicting Cities Service as an oil-producing, refining and marketing organization, quality of products, etc., with the Cities Service heat prover in operation to demonstrate its advantages to fuel consumers. J. J. Dorr.

Clarkson Mfg. Co.—Clarkson Type 28FA "Redbird" pneumatic loader with 15-hp. motor. Clyde E, Clarkson.

Cleveland Worm & Gear Co. and Farval Corp.—Speedaire fan-cooled worm-gear reduction unit in operation with cutaway model of standard unit and a worm-and-gear set; Farval manual and automatic centralized lubrication systems in operation, G. T. Collatz.

Coul Age.—Display depicting the publication's service to readers; copies and information on affiliated publications, Mining Catalogs, Coal Mine Directory and Keystone Coal Buyers' Directory.

Coal Mine Equipment Sales Co.— Miniature locomotive illustrating the rebuilding work; novelty age-teller cards that commemorate the organization's 38th year. Frank J. Wolfe, Sheldon J. Wolfe, James C. Lindsay and F. M. "Spike" Neil.

Coffing Hoist Co.—Complete line of hoisting equipment, including Quik-Lift electric hoists, ratchet-lever hoists with capacities ranging from % ton to 15 tons, hoist-jack, Mighty-Midget puller and other miscellaneous tools. J. R. Coffing.

Colorado Fuel & Iron Corp., Wickwire-Spencer Steel Division—Wickwire rope for mining, plus an animated model of a mine lighthouse. A. S. Bairden.

Combustion Engineering — Superheater, Inc., Flash Dryer Division— C-E Raymond flash-drying system for fine coal, demonstrated by plastic working model. C. W. Gordon.

Crichton Co., Equipment Division— Face pumps, face rock-dusters, timber saws, supply hoists and other face units. NEW—Crichton all-mechanical hand-held coal-and-rock drill for one-man operation, powered by a flexible shaft connected to a cutting machine operating at any speed. A. B. Crichton Jr.

Cummins Engine Co.—Activated cutaway model of the 275-hp. Model NHBS-600 Cummins diesel engine; cutaway model of the Cummins fuel pump; and translite photographs of Cummins diesels powering various types of trucks, earthmovers, excavators and other equipment. Howard P. Sharp.

D-A Lubricant Co., Inc.—Full line of heavy-duty lubricants and engine oils. Robert J. Binford Jr.

Nelson L. Davis Co.—Operating model of an actual heavy-media float-and-sink coal-processing plant with a capacity up to 250 t.p.h.; flow sheets, illustrations and data on various coal-processing plants now being built by the organization, N. L. Davis.

Deister Concentrator Co.—Improved latest-type SuperDuty Diagonal-Deck coal-washing table, one-fourth size, in operation; Concenco spray nozzles. NEW—Concenco SuperSorter, a giant classifier for hydraulic classification of feed in new applications, plus a large photographic view of four 8-cell Concenco SuperSorters placed in operation late in 1948.

Deister Machine Co.—Deister vibrating screen in operation, plus a photographic display of installations of the company's products. Irwin F. Deister.

Deming Co.—Vertical-turbine selfpriming pump, centrifugal pump, small sump drainer and horizontal piston-type mine gathering pump.

Denver Equipment Co.—No. 8 Denver "Sub-A" flotation machine, preceded by a Denver super-agitator and conditioner; display of samples of cell feed, ash-reject product and final coal concentrate. Henry J. Gisler.

Detroit Diesel Engine Div., General Motors Corp.—60-kw. a.c. generator set; 3-cylinder GM Series 71 diesel demonstrated by an operating cutaway. NEW—General Motors torque-converter and fluid-coupling unit specifically engineered to the GM Series 71 2-cycle diesel engine, shown with the diesel. M. Q. Fullington.

Differential Steel Car Co.—Large-capacity all-steel mine car.

Dooley Bros.—Two mine trucks equipped with two mine drills and arms; slide projector showing Kodachrome pictures of actual mining operations.

Duff-Norton Mfg. Co.—Various types of mine jacks, including mineroof jacks for cross-timbering and mine-roof support, pin-timbering and angle jacks, push-and-pull, bell-base, automatic-lowering, standard speed, cable-reel, journal and hydraulic jacks. Dale Christopher.

E. I. du Pont de Nemours & Co., Organic Chemicals Dept., Explosives Dept. and Fabrics and Finishes Dept.

—General company exhibit featuring "What's New From du Pont"; improved Neoprene rubber products; photographic blow-ups and actual demonstrations featuring permissible dynamites, electric blasting caps and other blasting supplies; Ventube synthetic rubberized tubing. J. M. Pierson, V. A. Cosler, C. O. Terpenning, W. E. Brown and W. D. Sparks Jr.

Thos. A. Edison, Inc., Storage Battery Division — Mine-haulage-equipment storage batteries, animated two-piece cell illustrating construction and a production machine in operation making positive tubes from perforated nickeled ribbon stock. W. W. Gould.

Electric Controller & Mfg. Co.— Valimitor volt-ampere-limitor; Tab-Weld plate resistors for motor control; frequency relay controller for wound-rotor motor-driven aerial tramway; Line-Arc repeating sectionalizer for d.c. power circuits; and Type WB brake for a.c. operation. C. Dyer.

Electric Steel Foundry Co.—ESCO coal-loading dipper, ESCO standard dragline bucket, all-cast manganese arch for 15-cu. yd. stripping dragline bucket, chains, ESCO box-type teeth and adapters, various other items.

Electric Storage Battery Co.—Ironclad batteries, with cutaway display to show construction details. Prize contest in which visitors may estimate

Coal-Show Exhibits Display Products of 223 Manufacturers

the number of times an Ironclad battery will lift itself before being discharged. Wm. Van C. Brandt.

Elliott Service Co.—Elliott Coal Mine Bulletin Board Service, "Management Information" weekly bulletin, and Elliott Employee Suggestion Service. R. L. Lawrence.

Elreco Corp.—NEW — Safety-type Qui-Connectors and Qui-Connect cable-to-cable splice box; new fuse nip and current tap of unusual design.

Ensign Electric & Mfg. Co.—Rail bonds and feeder connectors, d.c. magnetic motor starters in both standard-enclosure and explosion-tested types, centrifugal interlocks for conveyors, and distribution centers featuring the Ensign lever-action plug. W. P. Dickson.

Enterprise Wheel & Car Corp.— Two 4-axle mine cars, one an all-steel car of the lift-endgate type with double-acting spring bumpers; the other a rotary-dump flat-bottom unit having a spring drawhead and bumper with rubber pad. W. E. Myer.

Eriez Mfg. Co.—Large-diameter permanent non-electric magnetic pulley in actual operation cleaning material; giant non-electric plate-type magnet developed for installation in the bottom of feed chutes; and a working model of the electronic metal detector for detection of non-ferrous metals. R. A. Roosevelt.

Euclid Road Machinery Co.—40-ton bottom-dump coal hauler; color sound film, "Euclids Move the Earth," plus trips to the new Euclid assembly plant for those interested.

Fairmont Machinery Co. and United Engineers & Constructors, Inc.— Photographic display of recently constructed plants. R. W. Decker.

Farmers Engineering & Mfg. Co.— Femco Trolleyphones and Femco lightweight belt-carried 1-to-10 shotfirer, both available for "live" demonstration. Norman F. Agnew and W. Porter Place.

Firth Sterling Steel & Carbide Corp.—Firthite tungsten-carbide mining tools, plus an animated display of Firthite mining bits and tools. N. W. deBerardinis.

Flexible Steel Lacing Co.—Hinged Flexco belt fasteners, Flexco HD belt fasteners and rip plates for belt conveyors, Alligator belt lacing for flat transmission and conveyor belts. NEW—Alligator wide belt cutter. Visitors will have an opportunity to compete for a live alligator to be given away. Warren B. Paulson.

John Flocker & Co.—Dry-treated flame-resistant and mildew-resistant jute brattice cloth, set up to permit visitors to apply the "blow-torch test" for flame resistance. NEW—Firestone plastic brattice sheeting distributed by the company. Ralph H. Irwin.

Flood City Brass & Electric Co.

— Junior car spotter, plunger
pump, sealed-beam headlights, fused
switches, line material, and locomotive and mining-machine parts. Harry
Lehman.

Fulton Bag & Cotton Mills-Brattice cloth and tamping bags. E. M. Hornsby.

Fyr-Fyter Co.—Complete line of portable fire-fighting equipment, including extinguishers ranging in capacity from 1 qt. to 80 gal., a fully improved extinguisher for any type of fire risk, an Instant Model Fyr-Fyter using Karbaloy, and stainless-steel extinguishers. George J. Lutz.

Galigher Co.—Two-cell Agitair flotation machine with Plexiglas front to show operation; screw-driven Geary-Jennings automatic coal sampler; two Galigher chain-driven automatic coal samplers complete with cutters, one for continuous and the other for intermittent operation. S. L. Evans.

Gates Rubber Co.—Gates belts and Vulco Ropes, with illustration of the patented concave-sidewall feature and an oscilloscope demonstrating shockabsorbing characteristics; Gates air hose and Yellow mine hose. Charles C. Nieman.

General Cable Corp.—Super-service heavy-duty portable cables designed for mining. W. W. Jericho.

General Electric Co.—25-ton highspeed mine-haulage locomotive, plastic model of a totally-enclosed fancooled Tri-Clad motor with photo-electric starter control, and Cabinetrol control panels. NEW—Newly designed motor meeting Bureau of Mines specifications.

Goodman Mfg. Co.—Complete operating belt conveyor; Type 460 track loader, 512 shortwall with bugduster, top-cutting shortwall, 8-ton modernized locomotive and Goodman parts. NEW—Goodman 660 tractor-tread loading machine; Goodman shuttle cars; Type 812 low-vein shortwall machines; with full hydraulic controls and built-in bugdusters, and new-type shaker-conveyor drive. John D. James.

Gorman-Rupp Co.—Gathering, sump and drainage pumps for both deep and strip mines. Gilmore Hiett.

Gould Storage Battery Co.—Batteries for underground haulage plus a model shuttle car with operating controls. NEW—Improved battery grid. M. W. Heinritz.

Gulf Oil Corp.—Oils and greases for coal mining, including Gulf Lubricant B for cutting and loading machines. G. B. Burkhalter.

Guyan Machinery Co.—Resistors for loading machines, mining machines, locomotives, shuttle cars, inspection cars and stationary motors; automatic d.c. motor starters; bondwelders; sealed-beam headlights for locomotives and loaders; and airflow indicator switch for signalling stoppage of the mine fan. H. V. DeJournett.

Hamilton Rubber Mfg. Co.—King Koal conveyor belting and other conveyor belting for inclines, slopes, washing and preparation. "Hobie" Todd.

Harnischfeger Corp. — Working model of Magnetorque hoist drive, complete with boom, dipper sticks and bucket, but with standard-size control to permit operation by visitors; stationary and portable welders. NEW —2 cycle, 3-cylinder P&H diesel. Paul Hunter.

Hendrick Mfg. Co.—Large and small screens in the company's line, with photographs of its various products. T. A. Warner.

Hendrix Mfg. Co., Inc.—Small-size stripping bucket featuring the same design and construction as the company's 32-and 35-cu.yd. dragline buckets. W. G. Hendrix and G. E. Trippe.

Hercules Motors Corp.—Engines and power units represented by 12 diesels and eight gasoline units, including several recent Hercules diesels—the Series DNX-V8 8-cylinder and three horizontal or "flat" 6-cylinder diesels, Models DWXLDF, DFXHF and DJXHF.

Hercules Powder Co.—Permissible and stripping explosives and blasting supplies. Theodore Marvin.

Hewitt-Robins, Inc., Robins Conveyors Division—Condensed mine conveyor consisting of one section of each type used in assembling Hewitt-Robins mine conveyors; Robins Eliptex dewaterizer and Robins Vibrex screen in operation. R. U. Jackson.

Heyl & Patterson, Inc.—Cyclone thickener made of glass for observation purposes. NEW—Thermal dryer. A. C. Gilbert.

Hockensmith Corp., Penn Body Division — Mine-car parts, including wheels, rollers and sheaves. NEW—Dump trailer with a zero mounting height and a low center of gravity—a 16-ft. 15½-yd. Morgantown type with an over-all height of less than 8 ft.

Humphreys Investment Co.—Fullsize Humphreys spiral concentrator operating on minus-14-in. coal. Merrill Wiker or Whitman E. Brown.

International Harvester Co.—182in.-wheelbase off-highway truck-tractor; 197-in.-wheelbase unit with 18cu.yd. dump body; 180-hp. diesel power unit; a cutaway diesel power unit. W. K. Perkins and Neal Higgins.

Interstate Equipment Division, Yara Engineering Corp.—Photographic enlargements illustrating aerial tramway installations, including heavy duty mine-refuse installations. Leo J. Vogel.

lowa Mfg. Co.—Underground mine conveyor and double-deck horizontal

coal screen designed for high capacity on fine sizes. NEW—Cedarapids 3033 Coal Mill for producing cubiclecrushed coal. Henry J. Adams.

Irwin Foundry & Mine Car Co.— 8-wheel man-trip car with capacity of 32 men, 8-wheel-mine-car truck and belt-conveyor idler set. Gray F. Sensenich.

I-T-E Circuit Breaker Co.—Metalenclosed automatic reclosing circuit breaker for control and sectionalizing of d.c. power; standard three-pole circuit breaker for use in tipple and preparation-plant switchgear. NEW—Multi-range overcurrent protective relay designed to provide proper protection for both off-shift and normal working loads. M. W. Pennybacker.

Jeffrey Mfg. Co .- Low- and hightype shuttle cars: two crawlermounted loading machines; tiremounted universal coal cutter; tiremounted drilling machine; shortwall cutter mounted on pneumatic-tired utility truck; shortwall cutter with slack-conveyor mechanism; Jeffrey conveyor-loader; pneumatic-tired elevating conveyor; intermediate beltconveyor sections: 30x36-in, doubleroll crusher; electric vibrating grizzly feeder; Aerodyne mine-fan assembly; and miscellaneous items, including chains, idlers, sprockets and replacement parts; plus enlarged photographs illustrating equipment applications. J. H. Fulford.

Johnson-March Corn. — Compound M. for dust control at the face, dump, loading machine or the tipple. George A. Mau.

Jones & Laughlin Steel Corp.—J. & L. nrecision-built wire rope and special alloy steels, including Jalloy and Otiscoloy; animated illustrations of wire-rope construction with colored translite photographs and motion pictures showing recommended applications. A contest will be held to name the new wire-rope manikin in the display. D. J. Henecker and E. K. Waldschmidt.

Jov Mfg. Co.-Standard line of loaders, shuttle cars, coal cutters, belt conveyors, mine fans, car pullers and coal drills; Silver Streak cadmiumplated rock drills and new and used Sulmet tungsten-carbide cutter and auger drill bits. NEW-High and low models of Joy Continuous Miner in operation; timber setter featuring selfcontained timber supply and a freely rotating boom; rubber-tire-mounted mine-car compressor; nostpuller with a scraper blade for maintaining shuttle-car roadways; 10-SC shuttle cara heavy duty unit for high-capacity gathering: SAC-91 stoper for roof pinning; and special hand-held drill for anthracite operations.

Kennametal, Inc.—Mining-machine bits, auger bits, finger bits, and solidhead bits for strip mining; rock bits for drilling medium and hard ground. Richard L. Farria. Kensington Steel Co.—Oro manganese and alloy-steel castings, chain and renewable-tooth sprockets; crusher parts; crawler treads, rollers, sprockets, dipper teeth, racks, pinions and other shovel parts; with photographs showing product applications. E. C. Anderson.

Lee-Norse Co.—Rubber-tired mineservice jeep, mine jeep and other equipment designed especially for servicing coal mining. E. M. Arentzen.

A. Leschen & Sons Rope Co.—Hercules Red-Strand wire rope in both preformed and non-preformed types; wire-rope slings, including the recently developed flat-laced slings.

R. G. LeTourneau, Inc.—E 16 reardump Tournarocker and Model C. Tournadozer, a 4-wheel rubber-tired high-speed tractor-dozer. NEW—A giant 50-ton Tournahopper, self-propelled coal hauler. Vernon E. Pray.

Lima-Hamilton Corp., Lima Shovel & Crane Division—Small working model of the Lima Type 1201 shovel in operation, plus photographs showing Lima shovels and draglines at work. E. E. Worrell.

Lincoln Engineering Co.—Lubricating equipment, including handguns, fittings, bucket pumps, air and electric barrel numps: Centro-Matic centralized lubricating systems: Kleenseal surface-check fitting with the ball-inton; and electric drum pumps. Al Woodland.

Link-Belt Co. and Link-Belt Speeder Corp.-Color motion picture demonstrating applications of shovel-crane and draglines for stripping and mining; sound movie illustrating the Float-Sink concentrator for heavymedia coal cleaning; operating units of the Link-Belt Multi-Louvre dryer and CA concentric-action vibrating screen: operating wood-slat apron roller-chain-driven conveyor: motor with Plexiclas housing and chain casing; herringbone reducer driven through Electrofluid drive: beltconveyor idlers; and photographs illustrating various phases of coal-R. B. Barnes, handling equipment. L. O. Millard and D. E. Davidson.

Long Super Mine Car Co.. Inc.— Two models of the 400 Series Longchain conveyors in oneration, featuring "Gravity-Takeun" headolece. Superfilte conveyor chain and "Whispering Joint" alloy-steel conveyor pans. J. B. Long.

Mack Trucks, Inc.—Model LRSW 30-ton six-wheel heavy-duty truck; Model LR tractor equipped with 32-to 35-ton bottom-dump coal trailer; Mack nower divider: and TRDX 51 transmission, said to be the largest in production. John Walker and M. C. Horine.

Macwhyte Co.—Various sizes and types of wire rope for hoisting, mining machines, loaders, shovels, draglines, cranes, etc.; Atlas braider wirerope slings. Forest J. Nelson. Marion Power Shovel Co.-Model of Marion walking dragline in operation, M. V. Cornell, Robert J. Lick,

Martindale Electric Co.—Protective dust mask; electric maintenance tools, including commutator grinding stones and tools, undercutters and undercutting saws, and other hand and motor-driven tools; growlers, ammeters, voltmeters, voltage testers, ohmeter, circuit tester and other electrical instruments. Wm. N. Osbun Jr.

McLanahan & Stone Corp.—Rockmaster crusher for handling mine refuse or for crushing coal. J. Craig McLanahan.

McNally-Pittsburg Mfg. Corp.— Full-size Gearmatic double-roll crusher; half-scale model of the discharge fingergate used in the McNally-Norton washer; plus illuminated photographs of major equipment. T. R. Crawford.

Mechanization — Display of publications' editorial content and circulation. Raymond Coombes.

Mine Safety Appliances Co.—Safetv products. including rockdust distributors. Edison electric cap lamps, protective hats. flame safety lamps, shotfiring units. gas-detection instruments. etc. NFW—MSA FaceDuster. a light portable high-pressure unit especially adapted to conveyor mines. C. M. Donahue.

Miners' Hardware Supply—Transition rails, compromise bars, skids, derailers, switch signals and other track equipment; interior mixer and extruder for producing clay tamping for stemmine; safety belts for nole climbers, car droppers, shaft and headhouse repairmen, Geo. C. Nelms.

Mines Equipment Co.-Neoprene cement for patching or replacing cable jackets; controls for stopping long belt conveyors during emergencies or roof falls: cable-fault finders: connectors for portable power cables: electric switchman: sand dryers: vulcanizers. etc.; plus a movie illustrating nortablepower mining layouts. NEW-Lowheight permissible dust-resistant safety circuit centers to serve drills, conveyors and cutters, and String-A-Lite sectionalized lengths of cord with molded-in lights and connectors for temporary lighting installations. R. G. Gehlsen.

Mining Congress Journal—Publication services of the American Mining Congress and the Coal Mine Modernization Yearbook, a fully illustrated record of the annual coal conventions and shows.

Mining Machine Parts, Inc.—Replacement parts, "Biggie" one-piece alloy steel guard rail combining splice bar and rerailer. W. P. Bigler.

Mobile Drilling, Inc.—Jeep- and tractor-mounted mobile prospecting drills designed for drilling holes approximately 5 in. in diameter but adaptable to use with larger bits.

Coal-Show Exhibits 40 Percent Greater Than 1947 Record Show

Mosebach Electric & Supply Co.— Rail bonds, section insulator switches, feeder switches, resistance-welding machines, trolley wheels, trolley-wire splicers, trolley frogs and taps, and other electrical items. John C. Loy.

Myers-Whaley Co.—Whaley Automat loading machine in operation, plus photographs of machines operating under various conditions.

Nachod & United States Signal Co. and Cheatham Electric Switching Device Co.—Operating model of automatic block signals, mine-haulage equipment, highway - crossing - signal model, trolley contactors, colored light signals and associated locomotive signalling equipment; electrically operated track switches and derails in operation, manually-operated momentary-contact switches, switch and derail indicators, control panels, circuit controllers, etc. Everett C. Brown.

National Electric Coil Co.—Demonstration of the winding of an involute loop mica-glass armature coil used in mine-locomotive motors; split-type mine-locomotive motor frame converted to a one-piece type of welding and machining. J. H. Chevalier.

National Mine Service Co.—Bemeco products, including controllers, cable reels, intermediate gears, brush-holders and a variety of other items: Hayden belt-fastening equipment. NEW—Wheat "Forty-Niner" electric cap lamp with battery jar of Butalite plastic; recently introduced lightweightmodel Koehler flame safety lamp. N. R. Chillingworth.

National Malleable & Steel Castings Co.—Willison automatic mine-car couplers, mine-car wheels, dragline chain, plain and swivel hitchings, etc. Herbert H. Smith.

Nolan Co.—Trip feeder-retarder and rotary-car-dumper models, rerailers, gear and wheel pullers, puller jacks and small tools.

Northwest Engineering Co.—Photographs illustrating application of the company's shovels, cranes and draglines. G. C. Williams.

Ohio Brass Co.—Complete line of power-handling products, including Types LG and KG (both permissible) and Type M (open-type) multiple interlocking distribution boxes; Type BDG (gas-proof) and BD (open-type) automatic motor starters; fused trolley taps; ground clamps; Mechano plugs; Type FG (permissible) splice box; O-B smooth-underrun trolley overhead line and feeder materials; and the Form-9 air-connecting minecar coupler installed on a J. & L. mine car. J. H. Sanford.

Ohio Carbon Co.—Brushes for motors on loaders, shuttle cars, locomotives and other equipment, with a display of raw materials used in the brushes and copies of brush survey books available. F. C. Aurand.

Okonite Co., Hazard Insulated Wire

Works Division—All types of cable, with enlarged photographs of mining installations; Hazaprene ZBF sheaths; Okonite splicing tapes; and a model of the Bureau of Mines flame test. T. R. Weichel.

Oliver Corp.—Model FDE Oliver-Cletrac tractor equipped with the new Heil cable-operated bulldozer; Model DDH Oliver-Cletrac equipped with new Drott Hi-Lift loader; Model HG Cletrac equipped with new Imp dozer; and displays of wheel tractors and other equipment. H. W. Davis.

Oliver Iron & Steel Corp.—Various styles and types of industrial fasteners, including bolts, nuts, studs, cap screws, pins and rivets. Carl Winger-

Osmose Wood Preserving Co.— Plant models and specimens of Osmose-treated timber after service underground; technical and cost data on the process, with a photographic file on mine-roof support. Joseph M. Bray.

Owens-Corning Fiberglas Corp.— Demonstration of insulating and winding of d.c. armatures with Fiberglas electrical materials, plus display of glass-insulated mining motors and a color sound film showing the use of Fiberglas insulation in both new and rewound motors. M. P. Claytor.

Page Engineering Co.—3-cu.yd. Automatic dragline bucket demonstrated by a working model, plus colored motion picture showing the unit in action. Robert W. Baker.

Paris Mfg. Co.—NEW—Models of horizontal and vertical drills and a self-propelled coal drill designed for one-man operation. G. E. Hoffman and A. V. Bonsey.

Penn Machine Co.—Everlast and other Super-weld rail bonds, improved gears and pinions and other replacements for new mining equipment.

Pennsylvania State College, School of Mineral Industries—Pictorial descriptions of work in resident instruction, extension services and research, with copies of a new illustrated bulletin, "More Profit in Mechanical Mining"; other bulletins and textbooks. A. W. Bitner.

Pittsburgh Gear Co.—Standard coalmining replacement parts, including taper-serrated shaft and pinion. NEW —Armored-type gear. Eddie R. Phillips.

Post-Glover Electric Co.—Steel-grid resistors, heaters, welders and automatic switches. R. W. Houp.

Precision Chain Co.—NEW—4th-Series Precision cutter chain using Rockbuster-multiple heavy bits and the new Rockbuster-diamond bits with adaptor clips. Frank L. Fulke.

Productive Equipment Corp.—4x10ft. two-deck suspended-type Gyroset screen with a varying stroke of 0 to % in. L. H. Lehman.

Frank Prox Co. Inc .-- Cutterbars

and drive sprockets for all types of cutting machines. NEW—Prox Duomatic cutting chains and Prox Duobit. Charles J. Forbes.

Pure Oil Co.—Petroleum products for coal mining, with extreme-pressure gear lubricants demonstrated. E. S. Miller and R. C. Osborne.

Quaker Rubber Corp.—Conveyor and transmission belting, V-belts, mine auction and discharge hose, fire hose, rod and sheet packings and mine trolley-guard rubber. Elmer Asbridge.

Raybestos-Manhattan, Inc.—Demonstration of belt fasteners and new types of conveyor belting; industrial rubber products, including belting and hose of various types, packings and friction material. P. L. Edwards.

Reich Bros. Mfg. Co.—Improvedmodel Delatester float-and-sink testing machine; data on a recently developed line of hydraulic rotary prospecting drills. Wendell L. Reich.

Reliance Electric & Mfg. Co.—A.c. and d.c. motors and renewal parts. NEW—Reli-X hot-pressed coils; explosion-proof corrosion-resisting motor; gearmotors. Charles E. Hugus Jr.

H. H. Robertson Co.—Various products for mine-plant construction, including Galbestos—a protected metal for roof and sidewalls; Q-panels metal insulated sidewall panels; exhausting ventilators; and Sheetlites a unit designed to provide even daylighting in buildings. R. A. Finlayson.

Roberts & Schaefer Co.—Full-sized Super-Airflow coal-cleaning unit for nut, pea and and %x0 and 10-mesh fines; operating oil-flotation unit to clean minus-65-mesh coal. R. T. Middiston.

John A. Roebling's Sons Co.—Wirerope applications illustrated with a series of translite photographs. F. J. Maple.

Rome Cable Corp.—Portable mining cables, with emphasis on the parallel-duplex type of trailing cable with Neoprene sheath and ground-wire construction. A series of safety posters stressing better handling of electrical cables will be offered free of charge. R. A. Gray.

Safety First Supply Co.—Self-contained breathing apparatus, plastic goggles, safety belts and Unox penetrant. NEW—Resuscitator, inhalator and aspirator to revive one, two or three patients at the same time; plastic safety hat; and air-line respirator. R. A. Phillips.

Salem Tool Co.—McCarthy vertical drill for 6- to 8-in.-diameter holes in overburden 30 to 100 ft. deep; self-propelled horizontal drill for 6- to 12-in. holes in overburden 20 to 120 ft.; McCarthy boring machine for rock drilling. NEW—McCarthy coal drill equipped with augers, 16, 20 and 30 in. in diameter, especially designed for recovery of coal after stripping.

Sanford-Day Iron Works, Inc.—Automatic drop-bottom mine car and ball-bearing wheels.

Simplex Wire & Cable Co.—Complete line of insulated wire and cable for use in mining. E. J. MacKenzie.

Simplicity Engineering Co.—O5-A-Veyor and a 4x12-ft. Model D doubledeck Simplicity gyrating screen in operation. J. C. Powlinson.

SKF Industries, Inc.—Complete line of anti-friction bearings and pillow blocks, including unit, split and heavyduty. R. H. DeMott.

Standard Oil Co. (Indiana)—NEW
—Superla mine-loader lubricants for all types of loaders and cutters; a heavy-duty cam-and-gear lubricant for walking draglines.

Standard Oil Co. (Ohio)-Oils and greases for coal-mining.

Star Jack Co.—Various jacks, including the Star aluminum M.S.P. (Mine Safety Post) and M.R.T. (Mine Roof Timber) jacks. F. J. Jakoubek.

Sterling Steel Castings Co.—Sterling cast-steel balance-design minecar wheels, with miniature mine cars demonstrating features; miscellaneous steel castings. NEW—Seals for stub axles. F. E. Rhine.

Stewart-Warner Corp.—Centralized lubrication equipment; related automatic controls, and other equipment for handling and transferring lubricants. E. R. Harris.

Streeter Amet Co.—MT-14 recorder and automatic weighing machine for weighing mine car in motion. V. C. Kennedy Sr.

Sunnyhill Coal Co.—Colmol continuous mining machine, with motion pictures of the unit under construction and in operation in various seams, plus a demonstration of changing or replacing bits in the cutting arms. W. J. Phillips.

Syntron Co.—Model unit of grizzly feeder, picking table, sizing screen and spiral elevator in operation; also the "Package-Unit" for coal preparation designed to meet the special demands of the small operator. L. Chedsey.

W. O. & M. W. Talcott, Inc.—Conveyor-belt fasteners and Acme steel-patch fasteners, with a mural illustrating a conveyor system including an actual piece of belting spliced with Talcott fasteners. M. W. Talcott.

Tamping Bag Co.—Wet-Strength tamping bags made of specially treated Wet-Strength Kraft paper. Alfred E. Pickard.

Templeton, Kenly & Co.—Complete line of Simplex jacks, including pinup and conventional-type roof jacks, rachet-lowering and post-puller jacks, hydraulic jacks and pullers. NEW—Two new timber jacks with aluminum-alloy housings. Wm. Simpson.

Texas Co .- Oil and greases for coal

mining, with two demonstrating machines showing the action of greases and a breakdown machine demonstrating a grease-lubricated bearing running at high speed. Frank M. Pobst.

Thermoid Co.—Various grades of Thermoid conveyor belting, industrial hose, brake linings and clutch facings, flat transmission belts and V-belts. A. F. Matheis.

Tide Water Associated Oil Co.— Lubricants for various phases of mine operation. F. C. Lempert.

Timken Roller Bearing Co.—Timken bearings and parts for mine cars and mining machinery, with cutaway models of mine-car wheels, conveyor idlers, return idlers and other equipment. J. W. Weir.

Tool Steel Gear & Pinion Co.—Coalmining machinery and parts illustrated with translite photographs and cutaway parts; mystery gear that revolves with no apparent means of locomotion. C. R. Burrell.

Trabon Engineering Corp.—Small fully automatic lubricating systems adaptable to equipment requiring almost constant lubrication in operation and also to conveyors and other unitarequiring lubrication at more infrequent intervals; various accessories, including hydraulic hose, tubing, tube fittings, swivel connections, etc.

Truck Engineering Corp.—Tandemaxle dump unit for highway haulage with a 20½-cu.yd. capacity for hauling 16 to 18 tons of coal.

W. S. Tyler Co.—Ty-Rock vibrating screen, Ro-Tap testing sieve shaker, Tyler standard screen scale testing sieves, and various woven-wire screens. H. F. Lawrence.

Union Wire Rope Corp.—Tuffy slings; Tuffy dragline, mining-machine and general operating ropes.

United States Rubber Co., Electrical Wire & Cable Dept. and Mechanical Rubber Goods Division—Royal Gold (Yellow Jacket) trailing cable, Ustex nylon conveyor belt and other products. R. N. Hanes and R. B. Carland.

United States Steel Corp., American Bridge Co., American Steel & Wire Co., Carnegie-Illinois Steel Corp., Columbia Steel Co., Cyclone Fence Division of American Steel & Wire Co., Gerrard Steel Strapping Co., Oil Well Supply Co., National Tube Co., Tennessee C., I. & R. R. Co., United States Steel Export Co., United States Steel Supply Co., Universal Atlas Cement -Steel and steel products used in mining; working demonstration of the application of American Tigerweld rail bonds; American Tiger Brand wire rope; electrical wire and cable; Cyclone Fence conveyor belting; USS 18-8 stainless-steel coal screen; demonstration of workability of USS Cor-Ten steel by fabrication of miniature mine cars; photographic displays of other products.

Upson-Walton Co.—Brattice cloth and wire rope.

Victaulic Co. of America—Complete line of Victaulic pipe couplings ranging from % to 60 in. in diameter; full-flow elbows, tees, reducers, etc.; and Vic-Groovers from % through 4 in. R. W. English and Frank Costanzo.

Viking Machinery Sales Corp.— Equipment for application and control of the Viking hot-vapor-oil process. C. E. Berry and Henry O. Erb.

Watt Car & Wheel Co.—All-steel 260-cu.ft. mine car equipped with four spring-suspended wheels and Ohio Brass couplers; the Watt bolster-type truck for 8-wheel cars. R. L. Edgar.

Wedge Bar Screen Corp.—Screens for mining, including plain-steel, highcarbon and stainless.

Wedge Wire Corp.—Screens in various metals and opening sizes, including screens for Carpenter dryers and aluminum screens for vibrators. W. E. Birby.

Western Cartridge Co., Division of Olin Industries, Inc.—Blasting caps and dynamites, plus dynamites manufactured by the Liberty Powder Co., Egyptian Powder Co. and Equitable Powder Co. NEW—Minimax Ventless delay caps, illustrated by a group of translite photographs. A. J. Barocca.

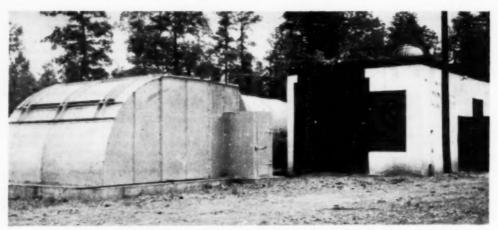
Western Machinery Co.—Wemco heavy-media separation circuit in operation to simulate cleaning of coal; "Win-A-Prize" game, challenging the operators' knowledge of different mining plants designed and/or constructed by the Western Knapp Engineering Co. Division. R. W. Hernlund.

Westinghouse Electric Corp.—Low-line locomotive operating on eccentric test blocks; portable Ignitron rectifier substation, m.g. sets and a complete line of motors; Beltroller, a limiting device for controlling speed of conveyors, together with a safety-switch system designed to permit stopping belt from a series of points along the conveyor line; gear motors, speed reducers, locomotives, shovel gears, renewal parts, line material, transformers, motor starters, packing glands, instruments and lighting gear; ground-current-limitor detector.

West Virginia Steel & Mfg. Co.— Prefabricated mine track with fullsized room turnout; rerailers now standard on the turnouts; rail and other products. J. B. Haskell.

The following organizations will be represented at the exposition, but detailed information regarding their exhibits was not available at the time this report was prepared:

Louis Allis Co. Electric Railways Improvement Co. Jaeger Machine Co. Socony-Vacuum Oil Co. Solvay Sales Div., Allied Chemical & Dye Corp. Bertrand P. Tracy Co.



NO. I FAN with motor and angine house at the right. The fan pulls air from a 642-ft.-deep shaft.

Praco Ventilation Improvements

New Airshafts and Fans Provide Separate Splits for Mechanical Sections—Continuous Ventilation Secured With Two Types of Automatic Units Transferring From Line to Standby Gasoline Engines Before Fans Stop

By THOS. G. FEAR
Chief Engineer, Alabama By-Products Corp., Birmingham, Ala.
And J. H. EDWARDS
Associate Editor, Coal Age

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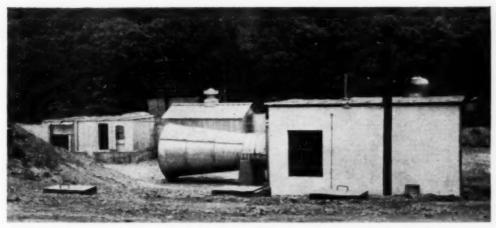
NO. I FAN DRIVE and auxiliaries, including gasoline engine, generator, incoming power panel, 2,300-volt air-break switch and sliding base for the two 300-hp, motors.

FULLY AUTOMATIC and rapid transfer to a standby gasoline engine at each of two new fans are among the several ventilation improvements recently completed at the Praco mine of the Alabama By-Products Corp., Praco, Ala., to insure against power failure and provide continuous ventilation.

Putting the new ventilation equipment into use practically completed a mine rehabilitation program, of which the first step was erection of a new preparation plant five years ago, now turning out 5,000 tons of washed coal per day of three shifts (Coal Age, September, 1944).

Using rope haulage, the Praco coal is brought out of a slope which follows the inclination of the coal bed from the outcrop. The mine is in the Mary Lee seam, ranging from 48 to 84 in. in thickness, and the farthest active workings are 15,000 ft. from the main portal and preparation plant. Cover ranges up to 800 ft. R. T. Hill is superintendent at Praco. H. C. Chase is general superintendent of operations and H. J. Hager is assistant general superintendent.

Twelve Joy sections and two heading sections operated by hand-loading onto conveyors are in operation. The recently completed revision of the ventilation put each of the 14 sections on a separate air split and each Joy section gets 20,000 to 25,000 c.f.m. Total air pumped through the mine is 408,000



THE NEW NO. 2 FAN is in the foreground. The old centrifugal fan in the background is a standby unit.

c.f.m., 200,000 at No. 2 shaft and 208,000 at No. 1.

One fan at an air slope 5,600 ft. from the main portal ventilated the mine for some years. The first step in the recent changes was sinking No. 1 airshaft (642 ft. deep) on the right side of the mine 2,600 ft. from the main slope or haulway, as measured along a panel entry branching from the main 6,400 ft. from the portal. Then No. 2 airshaft (425 ft. deep) was sunk at a similar point on the left side.

New modern streamlined fans at each of the new shafts, operating exhausting and equipped with the automatic engine auxiliaries, now work in parallel to ventilate the mine. There are four intakes, one being the main portal, another the outlying slope noted in the preceding paragraph and two old 12-ft. shafts. Entirely different methods, one primarily electrical and the other primarily mechanical, are used in effecting the automatic change-over from electrical to gasoline-engine power on the two new fans.

At No. 1 fan, a 7-ft. Model H111-50 belt-driven Ladel unit, the
450-hp. LeRoi V-12 gasoline engine
equipped with "Synchro-Start"
control, is directly connected to a
2,300-volt 375-kva. Westinghouse
generator. The transfer from line
power to engine-generated power is
accomplished by a double-throw
2,300-volt air-break switch that
formerly served as a reversing
switch on a mine hoist.

Two 300-hp. electric motors, one General Electric and the other Westinghouse, are connected through shaft couplings to a V-belt

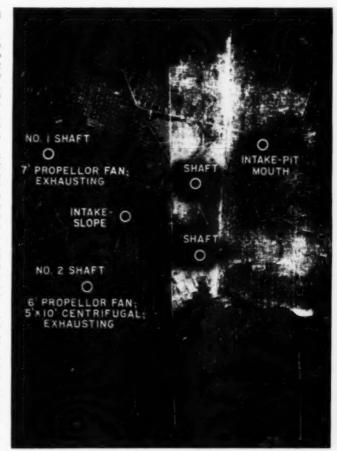
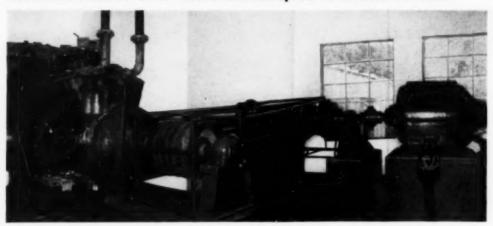


FIG. I—TWO NEW AIRSHAFTS and new fans have improved ventilation at Praco mine.

Each of the 14 sections now is on a separate split.

Automatic Transfer Units Assure Uninterrupted Ventilation at Praco



THE 450-HP. GASOLINE ENGINE at No. 2 fan is Y-belted to a pulley and clutch plate mounted on a quill. The collector rings and magnetic clutch (left of motor) tie the Y-belt pulley to the shaft when electric power fails and the gasoline engine starts.

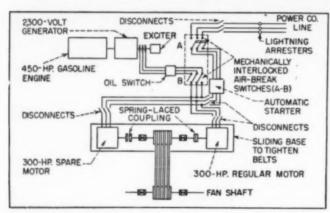


FIG. 2—THE DOUBLE-THROW-SWITCH installation for automatically transferring from line to gasoline power at No. 1 fan takes over the instant line power fails.

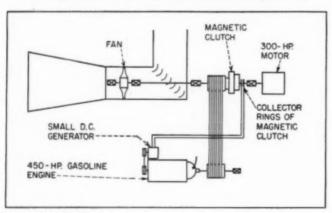


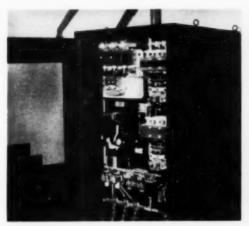
FIG. 3—CLUTCH METHOD of automatically transferring power from the direct-connected motor to the qusoline angine at No. 2 fan serving one side of the Praco operation.

pulley driving the fan. Motors and pulley-shaft bearings are mounted on a sliding base for belt tightening. One of the motors is a spare and can be brought into action by slipping a spring steel lacing into a Falk coupling and switching power leads from one motor to the other.

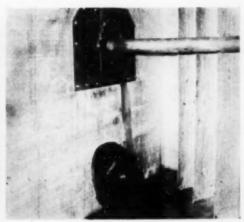
If line power fails, the 2,300-volt incoming air-break switch opens by gravity to disconnect from the automatic starter. At the same time the mechanically interlocked 2,300-volt air-break switch between the engine-driven generator and the fan motor is closed, leaving the starter out of circuit because the fan motor speed will increase as the engine gains speed and the generator voltage builds up. At the instant of line power failure, a "Synchro-Start" control on the engine closes the ignition circuit and starts cranking. The engine is started so quickly after line-power failure that it picks up the load before the fan has stopped. Water-gage charts show a normal level of 5.4 in. and likewise the fact that the drop is halted at 1 in. by acceleration of the engine and building up of the generator voltage.

Functions of the Synchro-Start, made by Synchro-Products, Inc., Chicago, include second and third trials if the engine fails to start at the first time. After three tries and failures it locks out. The Synchro-Start also includes anti-diesel protection. In other words, it closes the throttle to prevent an overheated engine from continuing to run after the ignition has been cut off.

When line power returns, a small relay breaks the ignition circuit to



AUXILIARIES at the No. 2 fan, which delivers 200,000 c.f.m. to a 425-ft.-deep shaft, include this automatic starter.



CONSTRUCTION VIEW at No. 2 fan, showing the anti-reverse device being assembled and the guide vanes at the turn in the air duct.

the gasoline engine, causing it to slow down and stop. A time-relay set for 11 seconds energizes a solenoid which operates the mechanically interlocked air-break switches to disconnect the generator from the motor and connect the incoming power line to the motor starter. The 11-second delay provides time enough for the engine to slow down and the generator voltage and current to drop so that there is practically no arcing at the switch.

An alarm bell rings at an attendant's residence within 1,000 ft. of the No. I fan if there is a line-power failure, or any other failure which might decrease the air flow, thus tipping a mercury switch attached to an air vane. The alarm bell at the residence is powered by a battery of dry cells.

This same attendant inspects once a day the other new fan and its automatic equipment at No. 2 shaft, which is a 2-mile drive from No. 1. The No. 2 fan—a Jeffrey 8H-72 Aerodyne—is a direct-connected unit with guide vanes to turn the flow in the air duct connecting fan and airshaft. The drive is a 2,300-volt 300-hp. General Electric motor.

The collector rings and a magnet section of the Stearns magnetic clutch are keyed on the drive-shaft between motor and fan. The other half of the clutch is attached to a V-belt pulley which floats on the drive-shaft. The V-belts connect the floating pulley to a 450-hp. LeRoi V-12 gasoline engine. A small d.c. generator (about 1 kw.) driven by a single V-belt from the engine supplies power to engage and hold the magnetic clutch while the engine is driving the fan. This

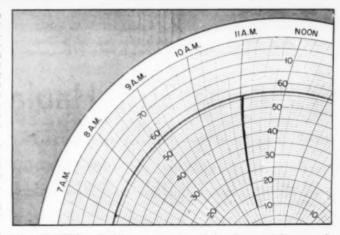


FIG. 4—ON TEST Sept. 28, 1948, automatic equipment had gasoline-generated power accelerating the fan by the time pressure had dropped to I in from the normal of 5.4.

engine also is equipped with a Synchro-Start unit which energizes a relay to start the engine following failure of line power. Upon power's return, a second relay breaks the engine ignition circuit, whereupon the magnetic clutch releases and the motor starter takes over.

This No. 2 installation, as compared to No. 1, is much simpler and less costly, but has the disadvantage that the electric motor continues to revolve when the engine takes over the fan drive. In addition, there is no spare motor. However, that situation is offset by a complete spare fan—a Jeffrey 10x5-ft. centrifugal connected to the No. 2 airshaft by an air duct at right angles to the duct of the Aerodyne

fan. If the power fails, the auxiliary for this centrifugal fan is a Sterling gasoline engine and 2,300-volt generator unit, which is manually started and stopped.

Power failure at No. 2 shaft signals the operator at his residence at No. 1. Storage batteries for the starting of all three engines are kept on trickle charge and the engines are given short trial runs once a week.

Each fan is equipped with centrifugal-type ratchet devices to prevent reverse rotation, in case of complete loss of driving power for one unit while the other continues in operation. With the method of automatic control used, the rotation of the fan must not be reversed.



ELECTRIC HOIST shown dumping a semi-trailer at Bradys Bend tipple permitted elimination of the semi's hoist and landing gear, with a total saving of 1,950 lb. in the unit's dead weight and a reduction in first cost and maintenance.

Cutting Strip-Haulage Costs

Electric Dump Crane Eliminates Truck Hoists and Landing
Gear to Reduce Dead Weight and Maintenance—New
Steel Tipple Features In-Line Equipment Layout—Company-Built Vertical Drill Handles Difficult Overburden

A CHANGE from truck to tractorsemi-trailer equipment has cut coalhaulage costs 20 to 35 percent at the strip mines of the Rimersburg Coal Co., Rimersburg, Clarion County, Pa. End-dumping by an electric crane at the tipple has eliminated the need for hoists on the haulage units, thus saving nearly a



CAPACITY OF THE TRUCK DUMP BIN at the new 150-200-t.p.h. For tipple is 150 tons. The tipple is 15 ft, wide center-to-center from the steel columns, with an 18-in. overhang on the loaded side to permit increased width for the picking-table floor.



HEADFRAME COLUMNS on the dump supporting the bridge crane are made of 8-in. double-strength well casing.



OVERHEAD BRIDGE CRANE on which the hoist is mounted moves backward and forward to adjust itself for vertical lifting.

ton of dead weight and reducing first cost and maintenance. Other major improvements made since the start of operations in 1947 include the replacement of the original wooden tipple at Fox mine with a four-track 150-200-t.p.h. steel tipple, in which all equipment is arranged in a straight line without cross conveyors. Vertical drilling of overburden has been speeded up and shooting cost reduced by a rig designed and built by the coal company. A deep mine is now under

active development by the company.

The Rimersburg Coal Co., of which C. W. Corbett is general manager; L. W. Rennaker, general superintendent; and Jos. L. Walker, mining engineer, ships from two railroad tipples 12 miles apart. The new tipple for the Fox mine is located at Rimersburg. This mine, opened in 1941 as the company's first strip mine (Coal Age, June, 1943), has peak months of 22,000 tons and a projected yearly average of 200,000 tons, with a remaining

life expectancy of 10 years. Facilities at the operation were later increased by the addition of larger equipment (Coal Age, October, 1945).

The tipple for the newer mine, Bradys Bend No. 3, is located at Bradys Bend. For a time, while working thin cover, this operation produced 50,000 tons per month, but in the high cover remaining production is expected to level off at 15,000 tons per month, except as it may be increased by approxi-



NEW STEEL TIPPLE at the Fox mine is a long narrow structure designed to facilitate in-line installation of equipment.



AN ELECTRIC HOIST also will be installed at the new Fox tipple bin to obtain weight savings on the units dumping there.

Shop-Built Drill and In-Line Tipple Among Rimersburg Improvements





COMPANY-BUILT VERTICAL DRILL powered by a diesel tractor has swivel-mounted wheels that can be locked out of the way when the drill is tilted for long moves. The two braces hitched to the tractor front contain hydraulic jacks for leveling the power take-off. Tarpaulin protection (right) is provided for operators during bad weather.







manager, Rimersburg Coal Co.

mately 10,000 tons from the underground mine under development.

Mr. Corbett got his idea for eliminating truck-body hoists in favor of one hoist or crane at the tipple from a description of the Cutshin Coal Co.'s truck mine in Coal Age (December, 1946, p. 78). At the

Cutshin operation, in Perry County, Kentucky, a power-tilted platform was built to dump flat-bed trucks. The article mentioned that trucks with hinged beds and without hoists also were being dumped by the tipple hoist without tilting the platform.

The idea was put into use with the purchase of six new 25-ton haulage units and installation of a headframe and crane mechanism at the Bradys Bend tipple. The units are International KBR14 gasoline tractors pulling Fruehauf semi-trailers. The 18-ft.-long bodies equipped

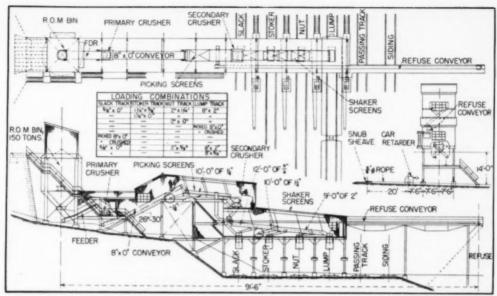


FIG. I—NEW FOX MINE TIPPLE recently completed by the Rimersburg Coal Co. to replace the original wooden structure features arrangement of all equipment in a straight line without cross conveyors. Total length, including the dump bin, is 151½ ft. The refuse-conveyor extension adds 41½ ft. The four-track steel plant has a capacity of 150-200 t.p.h.

with side boards carry 25 tons of coal from loading shovel to tipple. The semi-trailer body is hinged at the rear and is without a hoist and the usual landing gear, which also was left off. The total saving in weight is 1,950 lb.

Bridge Crane Holds Hoist

The headframe, made of 8-in. double-strength well casing, supports a bridge crane, on which the electric hoist is mounted in a fixed position at the center. As the front end of the semi-trailer body is hoisted, the crane bridge drifts back about 8 ft., moving forward the same distance as the body is let down. After the driver unhooks the rope, he swings it over and hooks it to the side of the structure out of the way for the next loaded truck.

To move the crane and hoist back under the shed at the end of a shift, the rope is hooked to the structure at the rear near the dump hopper and the motor is started. The control button must be held down to keep the hoist running.

Trucks also dump at this Rimersburg tipple. The fleet consists of four GMC Type AC-503 units hauling 7 tons and four White WA22 hauling 8 to 10 tons. These, like the new 25-ton tractor-semi-trailer units, are gasoline driven, since Mr. Corbett prefers the gasoline engine



THE 9-YD. DRAGLINE and the vertical drill (background) are working on a bench 42 ft. above the coal. Cover here is 80 ft., the maximum stripped.

to the diesel because of simplicity in maintenance. The 25-ton units are operated only on the company's private roads and thus are not burdened with a license fee.

The new 150-200-t.p.h. tipple at Fox mine, designed and built by the Pittsburgh Coal Washer Co., consists of the following equipment arranged in a straight line: 150-ton truck dump hopper, apron conveyor acting as feeder and elevator, primary crusher, apron-type elevating conveyor, picking screen, secondary crusher, shaker screens with kickback chutes to three of the tracks and a refuse belt extending out into the field across the tracks from the tipple. Total length of the plant, including the dump bin, is 151½ ft. The refuse-conveyor extension adds 41½ ft.

Width of the tipple is 15 ft. measured from center to center of the steel columns. There is an overhang of 18 in. on the loaded side to provide increased width for the picking-table floor. Siding and roofing are 20-gage aluminum.

Plant Capacity Variable

The apron feeder and elevator is 43 in. wide by 18 ft. long and has a two-speed drive operating at 18 f.p.m. for handling 150 t.p.h. and at 24 f.p.m. for 200 tons. The primary crusher, an 18x36-in. double-roll unit made in the mine shop and driven by a 25-hp. motor, has a fixed setting to reduce the run-of-mine to 8 in. for picking.

Function of the main conveyor, 42 in. wide by 431/2 ft. long and operating at 90 f.p.m., is to elevate (261/2 deg.) to the picking screens. The screens are 22 ft. long, operate with a 5-in. stroke at 135 r.p.m. and are driven by a 15-hp. motor. The upper section, 5 ft. wide, contains 10 ft. of 11/4-in. round-hole screen to drop slack out to facilitate picking the top size. The lower section, 51/2 ft. wide, is a chute to convey the 114x0-in. to the main shakers, where it joins the top product that has been through the secondary crusher. The secondary crusher is a McLanahan & Stone single-roll 18x48-in, unit driven by a 60-hp. motor. It can be opened to permit coal to pass through without crushing or can be adjusted to make 114-in. stoker.

The first half of the main shaker consists of a chute section 4½x24 ft. The second is a 5x26-ft. chute section. It has a stroke of 5 in., a speed of 135 r.p.m., and is powered by a 25-hp. 900-r.p.m. motor. Both screens are Parrish-type hung with boards.

Normally, loading at this operation consists of plus 2-in. on Track No. 1, 1½x2-in. on No. 2, ½x1½-in. on No. 3 and slack on No. 4. At present, all sizes are loaded through chutes, but plans are under way to install a loading boom on Track No. 1. The conveyor of this boom will be a 30-in. belt.

The 14-in.-wide refuse belt conveyor is 145 ft. long, operates at a speed of 120 f.p.m. and is powered by a 3-hp. motor. Combined weight of the steel structure of the tipple and the machinery, including mo-

tors and controls, is 377,000 lb. Floors are 4-in. oak. All motors are General Electric 220-volt totally enclosed fan-cooled units, and the controllers are dust-tight NEMA Type V by the Clark Controller Co.

Five tractor-semi-trailer units carrying 15 tons haul regularly to the tipple. The units consist of Autocar Model C90T gasolinedriven tractors and Fruehauf enddumping semi-trailer bodies, 16 ft. long and holding 20 yd. water-level, equipped with hoists. Installation of a Shaw-Box 12-ton trolley hoist or crane at the dump bin and removal of the hoists from the haulage units are planned to obtain the same weight and maintenance advantages secured at Bradys Bend. Older haulage equipment at the Fox mine consists of four Type WA22 White trucks hauling 8 tons.

In some places, as much as 80 ft. of cover is stripped. After the top soil and soft shale have been benched off, the lower 30 to 50 ft. of harder material is vertically drilled for shooting.

During the first year or two of operation the company could not find a commercial drill of sufficient capacity, speed and stamina to handle the job and, as a result, designed and built a drill in its maintenance shop that has proved completely satisfactory throughout five years of operation.

Diesel Tractor Powers Drill

The unit is attached to a Caterpillar D-4 tractor equipped with a 53-hp. diesel motor which has ample power for long life in drilling 500 to 900 ft. of effective holes per day of two 7½-hour shifts. Duties of the three men on each shift include loading and shooting.

The drill is a semi-trailer unit mounted on 7:50x16-in. heavy-duty truck tires. It is attached to the tractor by two horizontal pins and by two braces containing hydraulic jacks that serve in adjusting the drill to straighten the universal joint of the power-take-off connection to the tractor.

The machine utilizes a hydraulic feed both for forcing the auger down and raising it. Augers are 6 ft. 8 in. long. The rig's rubber-tired wheels are mounted on casters and can be turned to a crosswise position and locked so that they will not roll when the rig is let down to horizontal for moving to new locations. The normal moves of 30 ft. or so between holes are made, of course, without dismantling. In one shift, the crew of three has disconsidered and the control of the course of the course of the course of the course of three has disconsidered by the course of the course

nected the drill, let it down onto a low-boy, pulled it to a new location, attached it to the tractor and drilled six holes.

"Effective hole" at this operation consists of the open part above the cuttings, which drop into the bottom. Because of the ineffective bottom section of 7 to 10 ft., holes must be drilled down through the coal. In some locations, holes of 65-ft. total depth have been drilled.

Daily performance data for the two $7\frac{1}{4}$ -hour shifts, taken at random from the files, are as follows (the first figure is the total number of holes drilled and the second the average effective depth of those holes in feet): 15-39, 11-39, 22-32, 19-32, 17-32, 15-38, 22-39 and 27-39.

Service Recorders Prove Value

The largest stripping unit employed by the Rimersburg Coal Co. is a Bucyrus-Erie Model 6160 Monighan walking dragline with a 165-ft. boom and a 9-yd. Daniels-Murtaugh bucket. Service recorders recently were installed on this dragline and on the company's other strippers to provide graphic records of working and idle time.

The recorders also proved themselves worthwhile where a shovel was stripping in bad cover containing large boulders or blocks of stone that did not break in shooting and were too large for proper handling by the machine. The recorder, operating on the vibration principle, provided such violent charts that the management was convinced of a fact already suspected-that stripping at that location was beyond the economical capacity of the shovel. As a result, the pit was advantageously abandoned, perhaps a month or so sooner than would otherwise have been the case.

Up to the end of 1948, the Rimersburg organization has done no underground mining. Now an underground mine is being opened and the driving of an entry 1,000 ft. in from the highwall is underway by hand-loading to determine the strength and action of the roof and check the character of the bottom. Suitable equipment later will be selected and purchased for a mechanical-mining operation to produce about 600 tons daily from two shifts.

Mining is in the Lower Freeport or "E" seam consisting of 40 in. of clean coal topped by 12 to 14 in. of boney. The coal recovered from the various pits to date has ranged from 20 to 60 in. and averaged about 40.

EXIDE-IRONCLAD BATTERIES ARE DIFFERENT!

Specially designed to provide deportable power for MINE LOCOMOTIVES, SHUTTLE CARD, TRAMMERS

Storage batteries are called upon to perform many tasks. No single type of battery is adequately suited to all. To meet these numerous requirements, Exide engineers have developed special types, to fit each application. Among these several types is the specially designed Exide-Ironclad Battery. Details shown below.

VENT FLUG specially designed to prevent ascape of electrolyte.

GREASE SEAL RING NUT holds barrery elements securely in place . . . prevents creepage of electrolyte . . keeps tops clean and dry.

SEALED CELL COVER flush with top of jar. Prevents collection of dirt or moisture . . keeps impurities out of call . . . eliminates leakage of

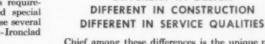
SEPARATOR of high parasity, specially treated to last the life of the battery.

NEGATIVE PLATEmade sativa heavy and built to match the long life of the pushise plate.

JAR made of specially tough and durable Giant Compound, Built to withstand the joint and jars

FEET. Internal short circuits practically eliminated because the two feet on negative plate rest on different ribs from those of the positive plate, and because separators extend below both plates and rest on all four ribs.

RIBS support all plates and separators. Their height provides generous sediment space so that internal cleaning is unnecessory.



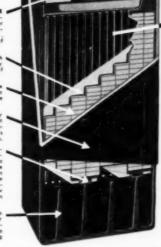
Chief among these differences is the unique positive plate, an exclusive Exide feature.

DIFFERENT IN DESIGN



EXIDE-IRONCLAD POSITIVE PLATE Consists of a series of finely-slotted tubes which contain the active material. So small are these slots that, while permitting easy access of electrolyte, they retard the active material from readily washing out or jarring loose . . . adding considerably to life of plate.

Exide-Ironclad Batteries have ALL FOUR of the characteristics that a storage battery must have to assure maximum performance from mine locomotives, trammers and shuttle cars—high power ability, high electrical efficiency, ruggedness and a long life with minimum maintenance. The combination of these four Exide-Ironclad characteristics assures years of dependable day-in, day-out service.





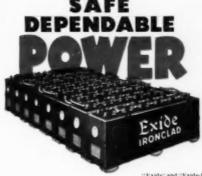
DESIGNED FOR STATIONARY USE

The Exide-Manchex Battery has the manchester type positive plate with the lead button construction. Specially designed for stationary use in many classes of industry.

DESIGNED FOR AUTOMOBILE USE

The Exide Automobile Battery has plates of staggered grid construction. Specially designed for use in automobiles, trucks, buses, aircraft and numerous other applications.





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The Foremen's Forum

The Whys and Wherefores Of Coal-Mine Timbering

TIMBERING is a routine operation at deep mines. But, is it always done the way it should be? Much of it is, of course, but there is good reason to believe that a fair proportion is not. Proper timbering promotes safety, keeps production going at the maximum rate and prevents damage to and loss of equipment, not to mention loss of coal that it otherwise would be possible to mine and sell. In addition, proper timbering normally is cheaper timbering.

Perhaps the place to start in considering timbering practice is to inquire into what it is supposed to do. Excluding main-line and other permanent supports, timbering has two main jobs:

 Acting as a guard against top falls that might catch men or equipment or interrupt normal mining operations.

Holding or breaking—often both

 a considerable thickness of top, usually in pillar mining.

The usual timber in room or other solid work is primarily guard timber. The main top, unless it is weaker than normally encountered, customarily supports itself at this stage in mining. Heavy weight therefore is not encountered until pillaring is begun, unless the size of pillars is reduced to a point where they cannot support the roof weight after the territory is opened up.

Much timbering consequently is installed for two purposes: (1) to be in place rendy to catch anything that might loosen and try to come down, or (2) to support a relatively thin section of the top, such as a layer of drawslate. Normally, therefore, such timber is not called upon to carry more than a moderate weight, although it should have sufficient strength or enough should be installed to meet any emergency load that might reasonably be expected.

The big reason why guard timbering, as well as timbering for heavier weights, as in pillar mining, is feasible is because the top itself has strength. Therefore, the job of guard timbering in particular and other timbering as necessary is to maintain that top strength by keeping the strata from sagging and breaking. Also — and equally important — it should prevent material that does break or is already loose from falling.

If the top itself had no strength, all that a round post, for example, would hold up would be the part directly over it. If a capboard was used, the part that could be held would be increased to the size of the board. If a crossbar was installed, more top could be held, but it still would be only that part immediately over the bar.

There have been instances where top was so weak that it would fall out all around a post, leaving only that directly above it in place. Fortunately, such conditions are rare. However, drawslate or other weak or broken material is frequently encountered and brings up the problem of timbering it effectively and, at the same time, economically.

Choice of the timbering system finally comes down to matching the supporting characteristics of various types of timbers with the character of the top. Briefly, the major considerations are as follows:

Single Posting—The single post provides the smallest of all areas in contact with the top. Basically, therefore, it offers the least protection to men and equipment where the top is weak or broken, unless it is set in great numbers, whereupon the cost becomes excessive. However, the single post is an excellent load-carrying unit and therefore is very useful in pillaring or in other operations where considerable weight must be supported either temporarily or permanently. Also, where the top is fairly strong, it functions well as a guard or safety post.

The protective spread of the single post can be increased by using capboards or short headers. More of the top is covered and therefore can be considered as really held. Also, capboards and short headers, particularly the former, yield slightly when weight comes on and thus prevent excessive breakage of posts. They also prevent aplintering or feathering of the tops of the posts, in addition to providing a better opportunity for getting the posts tight when they are

Crossbars—The crossbar or header greatly expands the top area that can be directly protected and at the same time provides free passage for equipment. As the top becomes more fragile, the crossbar becomes more and more valuable as a guard support. Even a thin plank will hold a surprising weight of material if the span is not too great. Consequently, crossbarring is feasible even in the thinner seams.

Lagging-With all the preceding timbering methods, material still can

How Are You on Exercising Ingenuity?

This quiz is designed to help you in your supervisory work. Study the questions and check "Yes" or "No." Then turn to p. 110 for explanation.

1. Do you feel that the usual way of doing things is the

	best way?	Yes	No	
2.	Do you make it a practice to keep track of what's being done in other places?	Yes	No	
3.	Do you feel that a machine is a machine and therefore all that's necessary is to keep it running?	Yes	No	
4.	Do you regularly have trouble with some machine, some man or some part of the operating cycle?	Yes	No	
5.	Do you think it's necessary to know fairly well what's on hand in the line of equipment and materials elsewhere around the mine?	Yes	No	
6.	Do you make it a practice to remember who is especially good at doing certain things?	Yes	No	
7.	Do you feel that the best way to handle your job is to keep on the go all the time?	Yes	No	



Tires still "young" at 3200 hours thanks to double bruise protection

THE BIG Rhude & Fryberger (Hibbing, Minn.) ore truck shown above weighs 90,000 lbs., loaded. Those B. F. Goodrich *Universal* tires have to carry loads like that out of iron ore pits and over haul roads in Minnesota's Mesabi range. In such service, sharp fragments of rock and iron ore can slash the dollars right out of tires! Tires are continually battered under their tons of load.

Yet, the tires in the picture are still "young" after 3200 hours of this service —apparently good for hundreds of hours more. Tread and sidewall rubber are still in good condition; cord bodies are still inract. How can one make of tire stand up long in service that quickly kills off others? B. F. Goodrich off-road tires are built with a specially compounded *ent-resistant* tread rubber. And there is double bruise protection in the form of the BFG double nylon shock shield, built-in between the tread rubber and the body plies.

The double nylon shock shield consists of four layers of nylon cord between the tread and the body plies. Under load and under impact, the strong, elastic nylon shields the rayon cord body.

Only B.F.Goodrich gives you the added protection of the double nylon

shock shield . . . the additional saving through (1) longer tire life, (2) increased number of recappable tires, (3) increased bruise resistance, (4) less danger of tread separation.

There's a specially designed BFG off-the-road Silvertown for every need. See your B. F. Goodrich dealer or write us direct. The B. F. Goodrich Company, Akron, Obio.

Truck Tires ...
B. F. Goodrich

Exercising Ingenuity

"No" should be the answer to Question I, 3, 4 and 7, p. 108; "Yes" to all the rest. The reasons, based on generally accepted principles, are:

1. The true test of ingenuity is the fact that changes are a regular operating procedure. If the supervisor is content to let things ride along the same day after day and month after month, it's a pretty good sign that he is not exercising ingenuity, meaning that he is not thinking about his job and how he can better results.

2. Exercising ingenuity does not mean that a supervisor has to think of every new idea or change in practice himself. That would be impossible. But if, by reading, visits with other men and so on, he has a fund of ideas on tap, he is not likely to get caught short when something comes up, while the exercise of ingenuity is made easier because it frequently becomes a matter of adapting an idea already developed elsewhere.

3. It might be assumed that certain things, such as a machine, could not be changed. That, however, is not the case. Even a machine can be changed if a study shows that the change would enable it to produce more efficiently. The exercise of ingenuity, consequently, should cover everything in the supervisor's jurisdiction.

it can be attained by putting up cross-

bars and then lagging between them.

bering is finally chosen, experience

has proved that systematic installa-

tion is a major element in achieving

results. This is particularly true

where protection of men and equip-

ment is the primary objective-as it

usually is. System means that timber

is always set. Without system, it may

be omitted at times as a result of bad

judgment or plain carelessness. All too

frequently, the result is an injury or

Naturally, an

study of top conditions and various

types of support should be made be-

fore a timbering system is adopted.

Once the choice is made, it should be

followed religiously, with deviations

only on the side of more to meet sub-

normal conditions. Timbermen or

others who set timber should be sup-

plied with blueprints or specific in-

structions, and changes should be per-

mitted only when approved by a quali-

System-Whatever method of tim-

4. Trouble not just trouble. It is an opportunity for exercising real ingenuity. The best way to practice building up ability to handle problems, therefore, is to look for the trouble spots and really give them a good think.

5. A solution to a problem might be most ingenious but if it depended upon some piece of material or some item that wasn't on hand it wouldn't help. So, to save time and get the job done, it is well to know what is available to work with.

6. Exercising ingenuity, to repeat, is not a one-man job. If somebody is especially good at doing some one thing, the wise supervisor will try to get him if he has a problem. Two

get him if he has a problem. Iwo heads frequently are better than one and the supervisor who takes advantage of expert advice will get the credit for using his own head.

7. Exercising ingenuity is another term for thinking. But to think, time is a necessity. The supervisor, therefore, should plan his work so that he will have time to take a good look at things, an opportunity to talk things out when necessary and, finally, a chance to sit down and do a little brain work. Brain work is the foundation of ingenuity and the man who is on the go all the time has little chance to exercise ingenuity.

fall out between the supports. The a minimum of cost involves, first of opportunity for such falls is the greatall, a supply of the right size and type est with single posts set on usual on hand where they are needed and at centers, is somewhat less with capthe time they are needed. Otherwise, boards and short headers and is still the timber is not set, resulting in a less with crossbars. Complete prohazardous condition, or considerable tection, therefore, requires covering time and money is wasted in hunting the top completely or nearly completefor material or working over somely, although this naturally is expenthing not designed for the job so that sive. Fortunately, complete coverage it can be used. seldom is necessary, but where it is

Buying precut capboards, wedges and crossbars is a major way of saving time and money. Another is making sure that timbermen have the proper tools and that they are in good condition for use. A good measuring device for determining sawing length is especially important. It not only saves time in measuring but also in recutting, not to mention the possible loss of timber through wrong cutting. Finally, of course, experienced men are an absolute necessity for maximum success in timbering.

Miners and Managers Are Partners in Business

By F. L. SMITH, Superintendent Keen Mountain Mine Red Jecket Coal Carp.

Lots of people hold the mistaken opinion that the interests of an employer and his workers are not the same—in fact, that their interests are just naturally opposed. These people simply don't realize that most of the interests of men and management are the same. Of course, there are a few shortsighted employers who feel that they have a right to profit at the expense of their employees. Likewise, there are some workers who think that their employer's pocket is deep and lined with gold. They forget that the only steady source of income to the employer is the sale of goods or services to customers.

The worker offers his labor and his skill for sale. If the employer can't afford the price of that labor and skill, the worker is out of a job. The employer can't afford to buy the worker's labor and skill unless the products of that labor and skill can be sold at a fair profit.

Most employers—nearly all of them, in fact—sincerely want to provide workers with the best wages and working conditions their business will permit.

Our American system of industry and economics therefore is endangered if too many people believe that management and men are natural opponents in a continual conflict of interests. Regardless of wrong impressions, twisted propaganda and false statements, the fact remains that partnership is the real relationship between management and men in business. That's why anything that weakens management also weakens the position of workers. Likewise, whatever hurts workers-lower wages, poor working conditions or management's lack of interest in workers' welfare-has a bad effect on management.

If workers insist in forcing wages higher and higher until the cost of the product is 'way out of line with competing products, the customer soon will cut down his buying or turn to another supplier to satisfy his wants. When this happens, the company turns up with a smaller income. With less income for the company, there must be lower wages or shorter working time for the men.

In this men-and-management partnership, the only thing the employer and his workers can divide between themselves is the product of their teamwork. The worker's investment in the partnership is his labor and coal-mining skill. The employer's investment is his business-management skill plus the money he put up to start the business. Both investments-that of management as well as that of men are the kind of risks that have built American industry and business. When men-management team-work makes the partnership pay off, there are fair profits for the company and steady jobs with good wages for workers.

But if either management or men try to grab more than a fair share from the partnership, the partnership suffers. And when the partnership gets hurt, everybody in it gets hurt—men and management alike.

-Adapted from The Red Jacketeer.

fied supervisor.

Efficiency in Setting—Getting timbers set when and where needed with

fatality.

Mechanically mined coal requires the best in coal cleaners
... the CHANCE Process
meets these requirements.

The Chance Sand Flotation Process with its high separating efficiency, its flexibility in operation, is the most efficient for cleaning coals from mechanized mines. Operation results over many years have demonstrated this fact.



THE HEART OF THE PREPARATION PLANT

United Engineers & Constructors Inc

NEW YORK 17

PHILADELPHIA 5

CHICAGO 2



Operating Ideas

Air Stand Cuts Drill Time by One-Third





IN A HAULAGE ENTRY where top rock has just been shot down for duckbill loading (left), the stand (without the jackhammer) is leaned against the rib to indicate its working position. How the operator continues to adjust the cock as the jackhammer advances the drill (right).

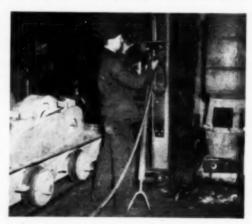
ONE MAN drills an 8-ft. hole in sand rock in 15 minutes without exerting himself by resting the jackhammer on an air-operated stand designed and made in the mine shop at the Hickey mine of the Diamond Coal Mining Co., Caryville, Tenn. Previously, two men holding the jackhammer worked hard to drill an 8-ft. hole in 45 minutes. The management credits W. L. Shipwash, chief electrician, for originating this improvement.

The column of the stand consists of a 1½-in, pipe telescoping into a 3-in, thin-wall steel tubing. A follower head with leather cup is mounted on the bottom end of the pipe and at the top end of the 3-in, tubing there is a guide collar. From an air connection at the top end of the 1½-in, pipe, a hose is carried to a three-way cock on the fittings to which the line hose and jackhammer are connected when in place. By means of the cock, air can be let into the stand to distend and hold it or can be let out to back the stand down.

Forked points on the bottom of the stand keep it from turning and slipping. The head is pivoted so that the jackhammer can remain level as it moves toward the face and as the drill stand assumes a more reclining position.

Once the hole has been started, the operator keeps the cock adjusted to admit just enough air to maintain the desired push on the drill. A pressure regulator was tried, but it proved unsatisfactory because diminishing air pressure is required as the drill enters and the stand tips toward the face.

The particular stand Mr. Shipwash is demonstrating in the shop illustration has been in use for five years and has required no maintenance. The underground photographs were made without the jackhammer because it had been



FOR DEMONSTRATION of the operating procedure, a jackhammer in the shop is placed on a stand and positioned as though the steel column were a rock face to be drilled.

taken from the section temporarily and departure of the outgoing man-trip did not permit the time to get the stand and jackhammer together.



OVER 250,000 FEET NOW RENDERING SATISFACTORY SERVICE

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Booth No. 1466

Coal Convention and Exposition THE AMERICAN MINING CONGRESS

> Cleveland, Ohio May 9th to 12th







HYDRAULIC JACK for anchoring power duckbills, shown in operation (left) and with its tilting base (right) saves considerable move-up time and holds more securely than the screw jack formerly used at Reels Cove mine.

Hydraulic Jacks Slice Duckbill Moving Time

REPLACEMENT of screw jacks by hydraulic jacks have cut move-up time for power duckbills from more than half an hour to 10 minutes at Reels Cove mine of the Tennessee Products & Chemicals Corp., Whitwell, Tenn. One man now tightens the jacks and they hold without fail. Formerly, three men using screw jacks and a 4-ft. piece of pipe as a lever often did not set them tight enough to hold during the loading of a cut, particularly if the threads had been allowed to get dirty.

Three 30-ton hydraulic jacks made by the Hein-Werner Corp., Waukeshaw, Wis., are employed. They are 11 in. high and have an extended height of 18 in. To facilitate angling the jacks against the roof, special bases that permit tilting and rotating were made in the mine shop. To limit tipping to about 20 deg. from vertical when the jack is not in use, low railings of ½-in. round steel were welded to the machine frame.

Three hydraulic jacks for a unit cost about \$180, but the additional in-

vestment has proved highly profitable, it is reported. Since heavy work is not required in tightening, the crew's job is more pleasant and, in addition, the jacks are really set tight. When the hydraulic type was first tried, there was some doub; whether they would hold pressure for a sufficient period of time. They have proved very effective, however, and after a week-end shutdown often are found tight enough to operate without being taken up. Other views of the duckbills in operation appear on pp. 84 and 85.

Hydraulic Lifter Eases Back Strain



HYDRAULIC LIFTER, locally built, raises and moves heavy parts around the warehouse and into the garage and shop.

AN OIL HYDRAULIC lifter built in the shop at the Broken Aro Coal Co., Okmulgee, Okla., and used in the supply warehouse and between the shop and the garage, lifts and carries wheels, gears, shafts, boxes, etc., weighing up to 20 tons when the retractable boom is telescoped all the way in, as shown in the accompanying photograph, and up to 1,000 lb. when the boom is fully extended to its 4-ft. length.

Hydraulic pressure for the lifter is applied manually by pumping the lever visible near the top of the hydraulic chamber. The piston inside the chamber is sealed against leakage by a leather cup. Oil for the hydraulic system is stored inside the 4-in. steel tube on which the boom pivots. A bypass valve at the base of the hydraulic chamber sends the oil back into the storage tube as the boom is lowered. C. E. Brooks, warehouseman who is shown standing beside the lifter, agrees that it is aptly named. It is called "Little Giant Back Saver."

MAKE QUICK, POWER-TIGHT CONNECTIONS WITH OB Ground Clam

is a consequent and an examinity of the consequent in the little in the consequence of the consequence of the

Tight mechanical connections to rail, rail bond or negative feeder prevent power leakage.

Full current-carrying capacity helps keep your electrical system in balance.

Fully insulated handles protect against shock.

Strong clamping grip "stays put" despite cable twisting.

Clamps for all types of grounding —rail, rail bond and negative feeder—are easy and quick to connect.



O-B JUNIOR PLIER-TYPE

GROUND CLAMP Similar to the larger size plier-type in design, the Junior will take machine wires No. 4 and smaller. Catalog No. 19907.



GROUND CLAMP Spring actuated bronze jaws tightly grip rail base, rail bond or negative feeder. Adjustable cable clamp will handle cable sizes as large as 4/0. Catalog No. 19383.



O-B BULLDOG RAIL CLAMP

Using the same principle as Buildog Clamps, this ground clamp can be attached quickly to the rail base by a twist of the rubber handle. Can handle machine cables up to No. 2. Catalog No. 16658.



O-B MINE RAIL CLAMPS This clamp fits under the rail with the jaws gripping the rail base on both sides. The handle screws tight on the threaded jaw. This clamp will take cables sizes No. 2 and smaller. Catalog No. 14627.

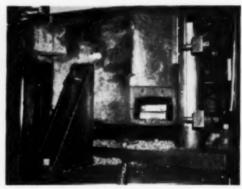


MANSFIELD, OHIO

Jigs Reduce Motor-Frame-Boring Time 75 Percent



JIG GREATLY REDUCES the time of setting-up work and promotes accuracy in boring the housing fit of locomotive motor frames.



THE POSITIONING PLUG extending through the jig base and into the center hale of the table can be seen under the motor frame.

WITH JIGS that position locomotive motor frames built up by welding on the vertical boring mill, boring a a housing fit takes only eight hours, as compared to the 30 hours formerly required, at the Library, Pa., shops of the Pittsburgh Coal Co.

Jig equipment, consisting of two base plates, several sizes of vertical arbors and sleeve adapters, accommodates 11 different motors. One base plate and one arbor are used at a time. The base plate is correctly positioned on the table by means of a plug fitting into center hole of the table and keys that fit into the table slots. Arbors are adjusted on the base in accordance with line markings labeled

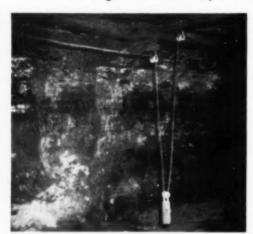
for the motor types. Dowel pins and bolts secure the arbor in exact position.

The frame of a MH74 motor is shown on the boring mill in the accompanying photographs. Other motors accommodated by the jigs are: MH839, MH831, MH77, A29, 102, GE824, GE803, GE840, W908 and HM825.

ARBOR ADJUSTMENTS for each type of motor are marked on the base. Dowel pins assure true position.



Weighted Take-Ups Keep Phone Cables Tight



INSULATING PULLEYS and a weight every 200 ft, keep telephone cables tight and out of the way of timbermen.

ALTHOUGH they are hung along the roof, underground telephone cables stay tight, are not loosened or broken by small falls of rock and do not interfere with the adding or replacing of crossbars in the Wildwood, Pa., mine of the Butler Consolidated Coal Co. Weights placed on the cables at approximately 200-ft. intervals have been responsible for these results.

J. F. Laser, chief electrician, tried out this idea in the mine in 1938 and it was soon made a standard practice. The cable shown in the photograph is a two-conductor parallel No. 14 with Simplex Anhydrex insulation. Insulator spools are arranged for free turning on the bolts, thus also serving as pulleys. An insulator-pulley also is attached to the top of the weight, which is usually about 30 lb. The weights generally are made from scrap pieces of 60-lb, rail.

The thick 84-in. Freeport seam favors this method of telephone-cable suspension because it permits 6 to 8 ft. of take-up at each suspension.

When timbermen work on a section of roof where a telephone cable is hung, they can pull the cable to one side or even to the floor where it can be protected during the work. Telephone service is not interrupted and the expense and difficulties of cutting and splicing are avoided. The greater assurance of uninterrupted service could prove to be a worthwhile safety measure in case of an emergency in the mine.



Preferred for Safety-Style-"Seeability"

Long a favorite because it gives pluses in allaround visibility and smart styling, the AO F-3100 Series Safety Goggles protects eyes against flying particles striking from the front and when equipped with side shields from the sides as well. Hinges and temples are set high, out of the way, providing a clear, unobstructed view of the working area. Bridge is strong, double-braced type and lenses are orbit-shaped

to follow the natural shape of the eye. Comfortable nose pads of non-corroding accetete distribute goggle weight evenly.

Side shields are of non-corrosive, perforated wire mesh—sufficiently fine for complete protection yet open enough to provide free circulation of air for comfort. Available with 6 Curve Super Armorplate clear or Calobar lenses in medium, dark or extra dark shades. Three eye sizes and bridge sizes. Your nearest MSA Representative can supply you.





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SAFETY PRODUCTS DIVISION



Piledriver Cuts Sledgehammer Work

A PILEDRIVER with a 250-lb. weight, designed and built by Al M. Hopper, blacksmith, Pittsburg & Midway Coal Mining Co., Scammon, Kan., is used in the blacksmith shop for straightening sheet steel, bars, angle irons, etc., and, in combination with a square wedge, for squaring out round steel tubes. The piledriver has eliminated sledgehammer work almost entirely.

Shown in the accompanying photograph, the 250-lb., 36-in. weight is welded to horizontal steel strips, which guide it along the vertical runners. A 10-ft. strip of 6-in. belting is used to raise the weight. This belting, bound at one end to the weight, passes upward and over a speed-reducer driveshaft connected to a 5-hp. electric motor, which is mounted on a beam overhead. A slight downward pull on the rope, which is connected to the upper end of the belting, increases friction between the belting and the driveshaft and thus lifts the weight to the top. When the downward pull on the rope is released, the weight drops. Maximum drop is 10 ft. The anvil at the bottom of the drop can be fitted with any one of several adapters, as desired, for straightening, shaping or driving.

SHOP-BUILT PILEDRIVER does many jobs for Al M. Hopper, blacksmith. Weight is 250 lb. and maximum drop is 10 ft.

20 Pointers to Efficient Lubricant Handling

- Where a large volume of lubricants is used, a central oil-storage house, set apart from the main plant, is always best.
- Avoid storage on wood floors since wood soaks up spilled oil and grease and becomes a fire hazard.
- If possible, use doors and windows of steel frame or roller type, fitted with wire glass and automatic closing devices.
- Place lubricant-storage facilities close at hand to reduce transportation time involved.
- 5. Where lubricants are stored in barrels or drums, it is always best to have hoisting equipment handy.
- 6. Good temperature control of storage areas permits all types of lubricants to be handled much more efficiently. Wide temperature fluctuations cause sweating and condensation of moisture in containers.
- Pumps, meters and other measuring devices will quickly save their cost over hand handling and use even where moderate quantities are involved.
- Keep oil drums on end and always check the storage space to see that no water can get into opened drums.
- Make certain that bungs and seals on drums are always kept tight to avoid moisture and other contamination as well as drippings.
 - 10. Keep drum-seal and bung

- wrenches nearby in storage areas, so that they may be easily used to make certain that seals are tight.
- Store only a slight excess of the quantity needed. Lubricants always are better when fresh. Large stocks invite contamination and waste in use.
- Keep monthly lubrication records for better and more accurate control, not only in storage but also in use.
- 13. Always have suitable containers at hand to catch all oil drip.
- 14. Provide reliable fire-protection equipment close at hand near all storage and make sure this equipment is tested regularly and often.
- Establish a regular clean-up routine of all storage facilities, as well as for machinery and equipment, particularly following a regular lubrication job.
- Collect and keep all oil-soaked clothes in covered metal containers and have them washed before they are used again.
- 17. Provide sand in sand boxes nearby for fire protection, but keep the boxes away from oil containers, since sand is a damaging abrasive when suspended in lubricants of any kind.
- 18. Get tough when someone permits spilled or dripped oils to accumulate anywhere—that generally means trouble of one kind or another.

- 19. Make it a hard and fast rule that all spilled oils or other lubricants are wiped up immediately. Such spillage is not only a fire hazard but often causes personnel to slip and fall, with resultant injury.
- 20. Avoid the use of lint-shedding rags for wiper clothes. Lint, when lodged in bearings or oil-circulation mediums, will clog and cause damage.

Tell Others, Joo!

EVEN THOUGH you may have profited from some of the ideas appearing in this section, are you getting the full credit and recognition from your associates and other mining men that publication of your own operating ideas here might bring? Send us the mechanical, electrical, safety or operating ideas that have worked for you. COAL AGE, incidentally, will pay you on publication \$5 or more for each.

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Yes, fuster awing it has 1055. In "Mangaclastical" 5 cycles to 4 on effect my yearsee, that adds to be

It's according to -- with a accord dawnging work yard angeling this a soliton according machines.

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THE PAIL MACHINESORQUE inventile power for awing destroyment relicinity."

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AND N. Holens from:

Cara Thurscherous



Shop-Built Bank Drill Is Versatile Unit

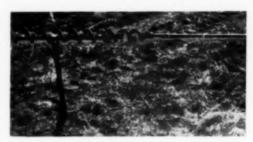




HIGHWALL DRILL with "Jeep" engine has governor to adjust speed to drilling needs. Crankshaft powers hydraulic thrust. Character of overburden determines choice of bit (right), hard-surfaced bit being used for rock, finger bit for normal drilling.

POWERED BY a standard Willys "Jeep" engine, a shopbuilt highwall drill has proved itself a flexible and versatile unit at the New Castle mine, Windsor Coal Co., Windsor, Mo., where Fred Bowen is superintendent. An outstanding feature of the drill, shown in the accompanying photographs, is its use of hydraulic thrust, power for the hydraulic system being taken off the engine crankshaft. A Mongovco governor on the "Jeep" engine increases power automatically when the bit strikes hard rock and eases off for normal drilling. Two kinds of bit are used, depending on the type of overburden. Both kinds are shown in the photograph at the right—the hard-surfaced, three-toothed bit for very hard rock, the finger-type chipping bit for ordinary drilling.

A step and platform over each of the two wheels of the drill provide safe and easy access to the vertical hand-operated screw lifts on each side of the chassis. Using the screw lifts at the highwall end of the drill and a pin in the desired hole in each of the uprights at the opposite end, the operator can lower the carriage to within 17 in. of the bottom or raise it to 4½ ft. above the bottom. By leaving the screw lifts fixed and moving the pins to raise or lower the back end of the carriage, a 14-in. vertical arc can be obtained at the business end of the carriage, thus making it possible to drill holes at an upward or down-



WORM WITH AUGER PITCH, screwed onto end of temping rod, fits around broken auger and withdraws it from drill hole.

ward angle as well as horizontally into the highwall.

To extract a broken auger from a drill-hole, a worm, forged to the same pitch as the auger, is held in readiness. When an auger breaks, the worm, as shown in the photograph, is screwed onto the end of a tamping rod, showed into the hole and turned clockwise, thus engaging the broken auger, which then can be pulled out easily.



Single-Cylinder Diesel Supplies Strip-Pit Lighting

TO OBTAIN the advantages of low fuel cost and troublefree service for pit flood lighting, the Rimersburg Coal Co., Rimersburg, Pa., has purchased small diesel-generator sets and mounted them on three-wheeled trailers.

The single-cylinder engine is rated at 3% hp. and the direct connected generator at 120-volts a.c. single-phase 1,500 watts. The unit, made by the R. H. Shepard Co., Hanover, Pa., includes an oil filter and an electric starter with a 6-volt battery.

DIESEL LIGHTING UNIT mounted on a trailer made in the mine shop features ready portability and low fuel cost.



A "special delivery" service for mine operators

Hewitt-Robins' plan of warehousing assures you fast delivery!

When you need parts for your mine conveyor quick, Hewitt-Robins will "deliver the goods" in a hurry.

The reason lies in those stacks of mine conveyor units you see above. For a complete stock of idlers, sections, pulleys, machinery and other component parts for Hewitt-Robins Mine Conveyors is carried in two convenient warehouses: Charleston, W. Va. and Passaic, N. J.

This is one of many reasons why leading mine operators depend on Hewitt-Robins Mine Conveyors for continuous, on-the-job performance without worry of costly shutdowns.

You can be sure of excellent performance from H-R Products. It is the only company that can assume full responsibility for all elements of your mine conveyor. Idlers, pulleys, drive units, belting ... all are engineered and installed by this one organization-as a single unit!

For complete information, write Robins Conveyors Division, 270 Passaic Ave., Passaic, New Jersey.

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at the Cleveland Coal Show-**HEWITT-ROBINS Exhibits** Nos. A-200, A-214, A-218, A-220

HEWITT ROBINS

MINE CONVEYORS

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Inseparably linked for Progress!

Rail transportation and coal are two of the most potent factors in American economy. For as they go, so goes the nation. Chesapeake and Ohio, fully aware of this indissoluble bond, has made and is making great contributions to this union.

In 1948, C & O spent \$86,000,000 in an overall improvement program—\$37,000,000 for roadway improvement; \$49,000,000 for new equipment. Extensions for branch lines cost \$7,400,000; bettering yards and terminal facilities including the large classification yards at Russell, Ky., \$11,700,000; a new coal loading pier at Newport News, Va., \$4,800,000. And many other improvements, most of which are directly connected with the handling of coal. In 1949, another \$69,000,000 is scheduled for even further improvements.

Yes . . . coal is the life blood of the Chesapeake and Ohio
—as it has been in the past—and will be in the future.



CHESAPEAKE & OHIO RAILWAY

Largest Originating Carrier of Bituminous Coal in the World



"SECURITYFLEX" has grown to mean leadership in mine cable as a result of ...

Anti-short breaker strip between conductors (available in cable with or without grounding wire) . . . crush resistance . . . special heat resistant insulation . . . rugged neoprene jacket that resists flame and abrasion . . . non-kinking construction . . . assurance of more continuous service. All this means more tons per cable.

Securityflex meets all requirements of the U.S. Bureau of Mines Flame Test and diameter specifications. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

NEW DESIGN GIVES LONGER SHUTTLE CAR SERVICE

Shuttle car service demands a cable that can take it. The inherent advantages of Securityflex Parallel Mine Cable, coupled with a recent improvement in design that greatly reduces grounding wire failures, make this cable more suitable than ever for shuttle car use. You will find this parallel mine cable gives longer, safer operation under the extreme cable tensions encountered in shuttle car service.



*An Anaconda Trade-Mark



PARTS REPLACEMENT REDUCED 67%

Sun Rock Drill Lubricant Also Helps Speed Drilling

Drillers in a Pennsylvania mine kept running into costly delays because the lubricant in use just wouldn't stay in the drills. Even with frequent applications, parts had to be replaced often.

Asked for his advice, a Sun engineer recommended Sun Rock Drill Lubricant . . . one of the complete line of Sun oils "Job Proved" for heavy-duty use in mine machinery.

Checking the record after 17 months, the operator found that parts replacement had been reduced 67 percent since adoption of Sun Rock Drill Lubricant for the job. Drillers report that this oil stays in the drill longer, gives constant

lubrication, requires fewer applications. Results: Holes drilled faster, and at lower cost!

In mine after mine, Sun "Job Proved" lubricants help to achieve maximum protection for machinery, minimum maintenance costs. For full information, call your nearest Sun Office.

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SUN PETROLEUM PRODUCTS

"JOB PROVED" IN EVERY INDUSTRY



News Round-Up



Pension Age Dropped to 60; Southerners Prepare for Talks

In a surprise move that caught the industry completely off balance, the trustees of the U.M.W.A. Health and Welfare Fund announced on April 7 that the age for miners retiring on pensions had been reduced to 60 from the 62 formerly in effect.

The announcement was made in a press release distributed at union headquarters that contained a statement and resolution introduced by Sen. Bridges, neutral trustee. Exra Van Horn, operators' trustee, is reported to have opposed the change. No comment was forthcoming from Mr. Lewis or from other union or fund officials.

According to the announcement, in introducing the resolution, Sen. Bridges said that he had employed Russell R. Reagh to make the necessary actuarial studies and Edward R. Hale and Prof. Arthur L. Brown to advise him on the legal matters pertaining to the study. Mr. Reagh's advice, he said, was "that from the viewpoint of long range financing it will make no appreciable difference currently to make payment of pension on a pay-as-you-go basis to miners, either at 62 or 60," provided other requirements are fulfilled.

"In addition, in proposing this change in the eligibility age I have taken into account the actuarial experience of the pension fund to March 1, 1949," Sen. Bridges said. "I am advised that as of March 1, 1949, 13,-816 miners, with an average age of 66.1 years, have qualified for and are receiving pensions. Of this number, 1,448, or 10.58%, retired at the age of 62 years; while 1,492, or 10.8%, retired at the age of 63 years. I have been informed that only 3,738 of these 13,816 pensioners, or 27.06%, have retired since Oct. 1,1948, when the pension program became fully activated. The other 10,078 miners, or 72.94%, had all retired before the pension fund was activated. Of the 3,738 miners who retired between Oct. 1, 1948, and March 1, 1949, more than 50% already were receiving disability grants from the Welfare Fund. The experience of the pension fund thus far would seem to indicate that the majority of miners prefer to continue to work so long

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as they are physically able rather than to retire. Accordingly, no undue burden will be assumed by the Trustees in changing the age of pension eligibility from 62 years of age to 60 years of age."

In commenting on the change,

Joseph Moody, president, Southern Coal Producers' Association, said the announcement "means what John Lewis said last year—that he was going to confront the operators with an accomplished fact. It is harder for the operators to dislodge something that is already accomplished than to prevent action.

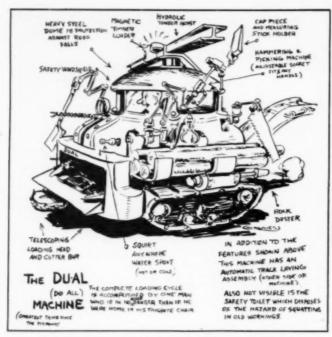
"With the acquiescence of Sen. Bridges, he can do what he wants," Mr. Moody added. "My reports are that the fund is already overspending its income. Lewis wants to raise the rate of commitment to have a basis for an increased demand."

Earlier, southern coal producers named a 14-man policy committee to prepare strategy and a program for forthcoming wage negotiations with the U.M.W.A. The committee, organized at a meeting of the Southern Coal Producers' Association in Washington, April 4, was expected to spend a week or 10 days exploring the ability of association members to meet expected union demands and planning moves at the conference table. The bituminous contract expires June 30 and



Old Timers Club Honors Penn State Senior

JUDGED OUTSTANDING SENIOR STUDENT in the 1949 Pennsylvania State College class of coal-mining engineering. Allen D. Gray Jr. receives the gold watch presented annually by the Old Timers Club from George H. Deite at the annual Mineral Industries School banquet held at the College March 25. Mr. Gray, whose award was besed on student belloting and faculty evaluation, was graduated in January, 1949, and is now employed by the Rochester & Pittsburgh Coal Co. Likelihood of success in his profession also was a factor in the award, in addition to scholarship. The watch was engraved as follows: "Old Timers Club Award to the Outstanding Senior Student Allen D. Gray Jr., the Pennsylvania State College Class of 1949, Coal Mining Engineering."



Wonder Machine Solves All Mining Problems

A WONDER MACHINE that could answer all coal-mining questions has been designed by J. W. Greaves, safety adviser, Division of Safety and Hygiene, Industrial Commission of Ohio, Scio, Ohio, Mr. Greaves' drawing of the dream machine, reproduced above with his permission, started out as one of a series of safety posters he is making for the Ohio coal industry, but, as he blushingly admits, "got slightly out of hand."

wage talks are expected to begin some 60 days in advance.

Joseph E. Moody, president of the association, said that the policy committee probably would be split into subcommittees to study specific subjects and to try to reach common ground with producers in other regions. However, some producers in the South and other areas were reported to be speculating on the obstacles to a united operators' front when negotiations get under way. Among other things, southern producers pointed out that recent freight increases affected them unfavorably and that recent inroads by competing fuels had softened coal markets in their area.

Operators Reduce Anthracite Price

Several major anthracite producers last month announced, effective April 7, price reductions of 25 to 50c. a ton to spur consumer buying during the summer. It was expected that the reductions might total as much as 75c. or \$1 a ton when passed on to consumers by retailers.

The first announcement reportedly was made by the Delaware, Lacka-

wanna & Western Coal Co. The Lehigh Navigation Coal Co. and Philadelphia & Reading Coal & Iron Co. were also among those following suit.

The change is the first general price reduction in the industry since the war and also is the first resumption of the prewar practice of reducing spring prices to encourage stocking up by consumers.

Personal Notes

Harold L. Beattie has been named general superintendent, West Virginia operations of the Warner Collieries Co., Cleveland, Ohio. Mr. Beattie was previously vice president in charge of operations in Northern West Virginia and Maryland for the Davis Coal & Coke Co., and for 10 years was division superintendent for the Coal Division, E.G.&F. Associates, in Southern West Virginia. George L. Phillips, formerly a mine production foreman at the company's Wolf Run mine, Wolf Run, Ohio, has been made safety inspector in the Ohio division. George Weals, assistant mine foreman at Wolf Run, has been appointed to succeed Mr. Phillips. Tom Budinsky has been appointed assistant mine foreman at Wolf Run, replacing Mr. Weals. Irving Foote, personnel man for the company in Ohio, has been transferred to assume similar duties at Mammoth, W. Va., succeeding Ed. Hall, resigned.

John M. Kerr, formerly general superintendent, has been named general manager, Berwind-White Coal Mining Co., Windber, Pa.

Emil Sandeen, pit foreman, Mine No. 15, Pittaburg & Midway Coal Mining Co., Scammon, Kan., has been named mine superintendent, succeeding the late Martin Velia. Henry Neher, formerly assistant, has been appointed pit foreman, to succeed Mr. Sandeen.

O. W. Peters, formerly equipment inspector, has been appointed chief electrician, Mine No. 15, West Virginia Coal & Coke Corp., Stirrat, W. Va. Roby E. Wilson, section foreman, has been made assistant mine foreman at Mine No. 15. William E. Lee, former sales representative for the Logan Machine & Electric Co., has joined West Virginia Coal & Coke as assistant purchasing agent, succeeding R. S. Watkins, who resigned to join the Truax-Traer Coal Co. at Kayford, W. Va., in a similar capacity.

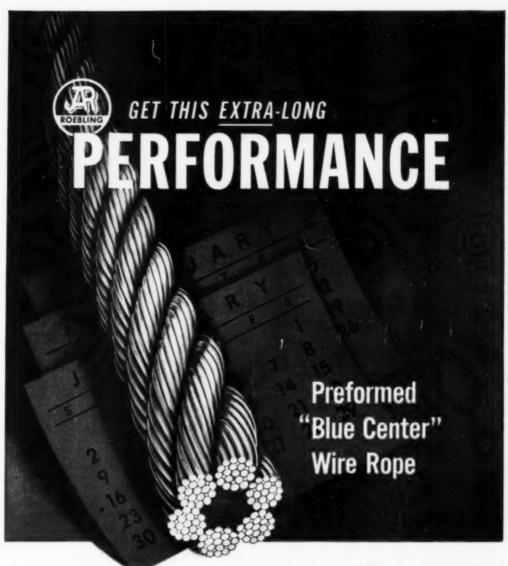
Kenneth Hughes, superintendent, Winters mine, Consolidation Coal Co. (Ky.), Farraday, Ky., has been transferred to the company's new Hendrix mine at Deane, Ky. Robert Collins, mine foreman, has been named to succeed Mr. Hughes.

John W. Abrell, superintendent, Mine No. 8, Peabody Coal Co., Tovey, Ill., has been appointed superintendent of the company's new Mine No. 17 at Pana. Michael J. Donnelly, mine manager of Mine No. 7, Kincaid, for the last seven years, has been named to succeed Mr. Abrell at Mine No. 8, John Carney has been appointed to replace Mr. Donnelly at No. 7.

Lionel A. Forsyth has been named executive vice president, Dominion Steel & Coal Corp., Ltd., of Canada. Mr. Forsyth has been a director and general counsel of the corporation for some years.

Edward A. Leming, Elkville, Ill., general superintendent, old Kathleen mine, Union Colliery Co., Dowell, Ill., for 20 years until his retirement in 1947, has been appointed a Jackson County mine examiner.

R. R. Estill, former American chairman of the Allied Coal Commission and previously associated with the U. S. Coal & Coke Co. and H. C. Frick Coke Co. as a mine official, combustion engineer and special representative, has been named general superintendent of the fluorspar division of the U. S. Coal & Coke Co., with offices at Mexico, Ky.



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Hudson Coal Co. Foreman Retires After 66 Years

COMPLETING 66 YEARS' SERV-ICE with The Hudson Coal Co., Scranton, Pa., Thomas Edwards, former mine foreman, retired April 1. In addition to his unusual length of underground service, Mr. Edwards has established another record of equal interest—64 years without a lost-time accident. His only injury occurred when he was 12 years old.

when he was 12 years old.

Mr. Edwards, who was born Aug. 24, 1873, started to work at the age of 10 in the Laurel Run breaker of The Hudson Coal Co. as a slate picker. For the next 22 years he worked for the company as a door boy, mule driver, mine-car runner, bratticeman and timberman. In 1905, he became a fireboss at the Loree colliery, then known as the Plymouth division. He served in this capacity for seven years, when he was promoted to assistant mine foreman. In 1917, Mr. Edwards was made inside foreman and continued in that position until 1932, when the colliery was closed.

During the following 17 years, most of which time the colliery was idle, Mr. Edwards supervised the pumping of mine water concentrated at Loree No. 2. When reopening of the colliery was started in 1942, his advice and knowledge were helpful to those in charge of the reopening work.

Mr. Edwards takes his well-earned retirement with the best wishes of the management of The Hudson Coal Co. and of the many mineworkers who know him.

Obituaries

Grant Stauffer, 60, died March 31 at a private nursing home in New York City following a long illness. Mr. Stauffer had extensive coal-mining and industrial interests through-



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Higher strength and lower stretch used to mean stiffer belts. But this belt of "Cordura" Rayon is more flexible. Its troughability index is 40% higher than that of the standard.

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Be sure to see the "Cordura" display at the Coal Show. You'll find it at the exhibit "WHAT'S NEW FROM DU PONT." Booths A-325, A-331, A-333, A-335.

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out the Midwest and last October was elected president of the Chicago Great Western Ry. At the time of his death, he was president of the Sinclair Coal Co., the Hume-Sinclair Coal Mining Co., the Huntsville-Sinclair Mining Co. and the Sentry Coal Mining Co., and was a vice president of the Seneca Coal & Coke Co. and the Marigold Coal Mining Co. He also was a director and a member of the executive committee of the National Coal Association.

Robert Dick, 85, a pioneer coal man in Southern Illinois, died March 13 at a hospital in DuQuoin, Ill.

Leonard Hall, 40, superintendent, Grayson Block Coal Co., Grayson, Ky., died March 3 at his home, following a heart attack.

Association Activities

Central Pennsylvania Coal Producers' Association and Eastern Bituminous Coal Association, at a joint meeting April 1 in Philadelphia, elected J. William Wetter, president, Rockhill Coal Co., Philadelphia, since 1938, president of both groups, succeeding the late Charles O'Neill. Mr. Wetter. who began his active mining career in 1903, has served as a director of the Central Pennsylvania association for nearly 30 years and as a director of the Eastern Bituminous group since its organization in 1933. At the same meeting, T. F. McCarthy, vice presi dent and general manager, Clearfield Bituminous Coal Corp., Indiana, Pa., was elected vice president of the Central Pennsylvania group and W. H. Naylor, vice president, Davis Coal & Coke Co., Baltimore, Md., vice president of the Eastern Bituminous.

Pocahontas Operators' Association has reelected its officers, as follows: president, O. L. Alexander, president, Pocahontas Fuel Co.; vice president, William Beury, president, Algoma Coal & Coke Co.; treasurer, Henry F. Warden, president, American Coal Co. of Allegany County and William C. Atwater & Co., Inc.; and secretary, W. E. E. Koepler.

Anthracite Operators' Association last month reelected Robert L. Birtley president. Other officers chosen by the group included: vice president, L. J. Pagnotti; treasurer, Bruce Payne; director-at-large, James H. Pierce; Carbondale region, Joseph DeAnglis, vice president, Louis Simoncelli, Albert Mascelli; Hazleton region, George M. Chisnell, vice president, T. F. Steele, E. H. Witney; Southern region, Ben H. Hay, vice president, E. J. Thomas, W. S. Jermyn, John E. Jones, E. P. Whitby, Ralph Lynch; Wyoming region, K. A. Lambert, vice president; Major John A. Hart, Peter Minichello, James Tedesco, Paul Conlon and Stephen Dubernos.

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B.C.R. Research Progress Subject at Annual Meeting

"Coal's Opportunities in Research" has been adopted as the theme of the annual meeting of the members of Bituminous Coal Research, Inc., to be held May 18 in Columbus, Ohio. Executives of more than 300 coal and railroad companies which support B.C.R. are expected to join with its executives and engineers to review current projects, plans for future research and industry needs.

As a part of the program, industry engineers who serve in active advisory capacities to B.C.R. will discuss work in progress and other coal executives will outline how coal research can be used to advance the industry technically and promote better markets. B.C.R. executives and directors will report on management phases of the program and representatives of laboratories at which B.C.R. sponsors research will describe their projects.

Speaker at the luncheon will be B. R. Gebhart, vice president, Chicago, Wilmington & Franklin Coal Co., and a member of the B.C.R. board of directors' executive committee. Julian E. Tobey, president, Appalachian Coals, Inc., and chairman of the B.C.R. technical advisory board will act as toastmaster. H. A. Glover, vice president in charge of sales, Island Creek Coal Co., B.C.R. director and chairman of its sales advisory committee, will preside at the technical session.

Other industry speakers and their subjects will include: "What Should the Industry Expect of B.C.R.?" Dr. C. J. Potter, president, Rochester & Pittsburgh Coal Co.; "B.C.R. Service Beyond Research," M. L. Patton, vice president, Truax-Traer Coal Co.;
"Railroad Motive Power," E. C. Payne, consulting engineer, Pittsburgh Consolidation Coal "Smokeless Residential Units," C. F. Hardy, chief engineer, Appalachian Coals, Inc.; "Small Stokers," F. K. Prosser, coal traffic manager, Norfolk & Western Ry. Co.; "Research for Industrial Uses," V. G. Leach, chief combustion engineer, Peabody Coal Co.; "Fuel Gas From Coal," J. Mitchell, director of research, E. G. & F. Associates; "Coal Preparation and Mine Drainage," H. F. Hebley, director of research, Pitts-

burgh Coal Co. Gerald von Stroh, director of development, B.C.R. Mining Develop-ment Committee, will discuss the work of the committee, and K. A. Browne, research consultant, president's office, Chesapeake & Ohio Ry. Co., will outline the progress in the development of the coal-fired gas turbine. Speakers from the laboratories will include Ralph A. Sherman, assistant director, Battelle Memorial Institute, and Rudard A. Jones, research associate professor of architecture, University of Illinois. J. B. Morrow, B.C.R. president and first vice president, Pittsburgh ConsolidaHere they are

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tion Coal Co., will conduct the annual business meeting.

Exhibits staffed by Battelle coalproject engineers will provide visual information on current projects and after the meeting work in progress will be inspected at the Battelle laboratories.

Pennsylvania Authorities Push Coal-Tax Action

Drafting of bill to tax coal 2c. a ton to provide funds for prevention of mine cave-ins was being spurred by Pennsylvania legislative leaders to expedite adjournment, it was reported early in April. Gov. Duff April 8 termed mine cave-ins a "very serious problem in Pennsylvania" and said that the Commonwealth was working on the problem. While details were not available, it was understood that a bill was being rushed for introduction into the state legislative bodies.

Earlier, approvals of such a tax by several groups of operators had been reported, but later reports indicated that such support could not be secured until details of the bill were available. The state tax would make various local taxes on coal illegal.

Late in March, a proposal to create a seven-man commission to study mine cave-ins and report to the General Assembly was introduced into the Senate by Sen. Patrick J. Toole. Another bill introduced into the Senate called for shifting the responsibility for planting strip-over lands from the state's Department of Forests and Waters to the Department of Mines.

On April 4, it was reported that Pearce-Westphal, Inc., and two of its officers, Edwin S. Westphal, president, and John H. J. Pearce, vice president, were fined a total of \$9,000 for failure to register under the state's stripmine conservation act. The prosecution was said to be one of the first of its kind in Pennsylvania.

In Maryland, a bill designed to overhaul the state's mine-safety regulations reportedly passed the Senate March 30 and was to go to the House for further action. A companion measure to increase supervision over small mines also was approved.

A new bill to regulate Ohio strip mining is being drafted, it was reported late in March. According to Sen. Clingan Jackson, progress was being made in preparing a bill approved by mine operators. The Ohio stripmine bill enacted two years ago has been termed a "dead letter" by Gov. Lausche, since the 97th General Assembly failed to provide funds for its enforcement.

In Kentucky, a subcommittee of the Legislative Research Commission April 4 began a two-day inspection tour of coal strip mines in Hopkins and Muhlenberg Counties. The commission was directed by the legislature to study strip mining and its creation of waste lands and report back at the 1950 session.



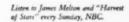
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The 1949 Edition of Keystone Coal Buyers' Manual, a Coal Age affiliate, scheduled for distribution about May 1, according to a recent announcement by J. R. Forsyth, manager.

Long the recognized source of operating and sales data on the coal industry, Keystone in this 30th edition provides detailed information on 1,917 coal companies operating 2,662 mines with a capacity of 100 t.p.d. or more, as well as listings of 752 coal sales organizations maintaining 1,354

In addition to the listing of personnel, location, capacity, seam mined, mining and preparation equipment in use, etc., for all mines in the United States producing 100 t.p.d. or over, Keystone provides descriptions of the coal seams in the United States, a di-rectory of coal sales organizations, a directory of mechanical cleaning plants, detailed state maps of coal fields, a directory of coal trade names and other information of value to the coal buyer.

A new feature of the 1949 edition is an alphabetical index of coal operaating and sales executives. The new edition is more than 200 pages larger than the 1948 issue.

Based on reports from operating companies, state and federal mine bureaus and other sources. Keystone is the most complete up-to-date directory of mine operations available. The new edition, for example, includes 429 mines-either new or of expanded capacity-not listed in the previous edi-Similarly, 289 mines in the 1948 edition have been eliminated because of closing or reduced operations.

Keystone may be ordered at \$15.00 per copy from Keystone Coal Buyers' Manual, 330 West 42nd St., New York 18, N. Y. Coal Mine Directory, which includes the mine listings published in one volume for the entire United States and in single volumes for certain states, also is available at prices quoted on request.

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MANY COAL-MINING COMPANIES make it a point to write us of personnel changes on their staff for inclusion in COAL AGE'S "Personal Notes" section, as well as other news of their company, such as new mine developments, safety and production achievements, annual staff functions, etc., accompanied by pictures where suitable and available. They know that friends, business acquaintances and employees all enjoy reading such news in COAL AGE. You, too, are invited to write us whenever the occasion arises-it takes only a minute. Job changes from the individuals concerned also are welcome. Address: News Editor, COAL AGE, 330 West 42nd St., New York 18, N. Y.





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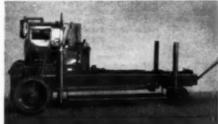
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Disco Smokeless-Fuel Plant Begins Operation

DISCHARGE SIDE of the new smokeless-fuel plant of the Disco Co., a subsidiary of the Pittsburgh Consolidation Coal Co., which was officially opened April 7 with ceremonies attended by city and county officials, business, labor and civic leaders of the Pittsburgh area. Reported to be "the world's largest plant for producing smokeless solid fuel from bituminous coal by the low-temperature carbonization process," the plant is 19 miles west of Pittsburgh and is expected to be operating at its full annual capacity of 250,000 to 300,000 tons in time to meet next fall's heating demands, which will begin to be felt in October.

Coal is preheated in the tiers of

ovens shown at the top and then is passed through the seven carbonizers underneath, where distillation removes the volatile elements and forms balls of smokeless solid fuel. The product is removed by two sheltered conveyors for sizing and slow cooling. Furnace and stove sizes are now being marketed. Some 400,000 tons a year of coal specially prepared at the Champion cleaning plant is to be used.

While Disco fuel is a manufactured product and cannot compete with local coal on a price basis alone, operating efficiences in this new larger plant are expected to permit savings of more than \$2.00 a ton over the price the fuel produced in the company's former facilities.

Coal and Business Activity

	This Date	1949 Over
Est. anthracite prod., week ending April 2 960,000	9,193.000	-38.4%
Est. bituminous prod., week ending April 2 9,600,000	126,131,000	11.4%

	Bituminous Coal Stocks (Thousands, no tons)				Cor	Consumption (Thousands, net tors)			
					(Thous				
	Mar 1, 1949	Days' Supply	Feb. 1. 1949	Mar. 1, 1948	Feb., 1949	Jan., 1949	Feb., 1948		
Electric power utilities	24.120	94	24,150	14,868	7,167	8.251	7,904		
Byproduct coke ovens	13.759	49	12,461	8,807	7.835	8.654	7,700		
Beehive coke ovens		0			952	981	846		
Steel and rolling mills	1 121	39	1.017	976	812	878	996		
Cement mills		48	1,164	991	640	733	636		
Other industrials		46	17,169	14,735	9,867	10,819	11,000		
Railroads (Class I)		42	9,551	6,906	6,628	7,498	9,091		
Retail dealers	1,907	6	2,243	1,189	8,5673	9,4471	11,677		
Total	68 834	45	67,795	48,472	42,468	47,291	49,920		
Source: U. S. Bureau of Mi	nes. tNo	t available	. fRetai	il dealer	deliveries				

	Latest Week*	Month	Year
Business Week Index of Business Activity, wk. ending Apr. 2	190.6	195.6	184.6
Steel ingot operations (% of capacity)	98.8	101.4	83.2
Electric power output (million kwhr.)	5,378	5,552	5,037
Crude oil production (daily avg., 1,000 bbl.)	5.072	5 187	5.389
Misc. & L.C.L. carloadings (daily avg., 1,000 cars)	74	7.3	83
All other carloadings (daily avg., 1.000 cars)	26	4.3	27
Prices, spot commodity index (Moody's, Dec. 31, 1931 = 100).	362.7	376.0	412.4
Prices, industrial raw materials (B.L.S., Aug., 1939 = 100)	247.5	265.9	270.5
Prices, domestic farm products (B.L.S., Aug., 1939 = 100)	290.1	298,3	366.7
Prices, finished steel composite (Steel, ton)	\$96.68	\$97.77	\$91.14
90 stocks, price index (Standard & Poor's Corp.) *Date of latest week for each series on request.	118.9	117.5	120,5

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 *Ask for names of users.



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Anthracite Fatalities Down in First Quarter

The Pennsylvania anthracite fatality rate per million man-hours was 0.89 for the first three months of 1949, according to a circular lotter issued April 4 by James J. Walsh, Pennsylvania Deputy Secretary of Mines. The 1949 rate was 14 percent better than that for the first three months of 1948, Mr. Walsh pointed out.

In his letter, which was addressed to all anthracite mine inspectors, mine officials and miners, Mr. Walsh stressed the aim of the industry to establish a rate of 0.5 or better in 1949 and called for better supervision of working faces by both miners and officials as one means of reducing accidents.

Johnstown Coal & Coke Continues Scholarships

Two scholarships in mining engineering for employees or sons of employees of the Johnstown Coal & Coke Co. are to be awarded again this year, according to a recent announcement. The awards, which were inaugurated last year, are each worth \$500 and are designed to encourage younger employees or sons of employees to fit themselves for supervisory positions.

Centralia Operation Closed by Peabody

Closing of the Centralia, Ill., mine, scene of the 1947 explosion that killed 111 men, was announced late in March by the Peabody Coal Co. The mine was acquired by Peabody from the Centralia Coal Co. and put back into operation several months after the explosion.

According to the announcement, the operation was being closed "for an indefinite period of time because it is no longer economically feasible to operate it." It had been producing about 2,300 tons a day recently. Miners employed at the mine were to be offered employment at other Peabody mines, it was reported.

NLRB Bans U.M.W.A. from Illinois Labor Ballot

Ruling in the case of the Mid-Continent Coal Co.'s. Green Diamond mine near Marissa, Ill., where the U.M.W.A. and the P.M.W.A. have been engaged in a jurisdictional dispute, the National Labor Relations Board on March 25 ordered an election among workers to determine whether the P.M.W.A. or "no union" will represent employees. Because John L. Lewis has refused to sign the non-Communist affidavit required by the Taft-



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See the GEARY-JENNINGS SAMPLER in operation at the American Mining Congress COAL SHOW in CLEVELAND—MAY 9 to 12—Booth Nos. 1562, 1564 — or write for illustrated bulletin No. 48-S.

"Leaders in Experience and Service"



Hartley Act of labor leaders who seek protection of the act, the U.M.W.A. will not appear on the election ballot.

At the same time, a spokesman for the NLRB denied that the decision indicated the union-shop clause in the U.M.W.A.-"captive" mine contract is dlegal.

Background of the dispute at the Green Diamond mine is reported, briefly, as follows: The P.M.W.A. made a contract with the Coal Producers Association of Illinois July 1, 1948. On Aug. 10, 1948, the Mid-Continent Coal Co. joined the association, presumably accepting the P.W.M.A. contract at the same time. However, on Sept. 30, 1948, the company signed a contract with the U.M.W.A. The Green Diamond mine later was closed for about six weeks because of a jurisdictional dispute between the rival unions. The company then asked the NLRB to decide which union represented its workers. The NLRB ruled that an election should be held but that the U.M.W.A. could not be named on the ballot.

Krug Urges Big Synthetic Liquid Fuels Output

Speed in developing synthetic liquid fuels from coal and extracting fuel from oil-bearing shale was urged March 27 by Interior Secretary Julius A. Krug, who submitted his annual report to President Truman on that date. Coupled with the secretary's plea for broader development along these lines was his program for a 20-year water-power development coating up to \$15,000,000,000, including the St. Lawrence power and seaway project.

In asking for speedy growth of synthetic-liquid-fuels output, to be conducted by private enterprise "with government help," Secretary Krug warned that the United States would face a "transportation collapse" if foreign supplies of oil were shut off. In addition, he declared that continued waste of irreplaceable materials and failure to find and develop new resources soon would undermine the nation's standard of living.

Even with estimated but unproved reserves of petroleum, "we have only about two generations of domestic crude oil supply left," Mr. Krug stated, as he pointed out that the nation is using its scarcest fuel, petroleum, faster than the more plentiful energy sources, coal and water. The secretary's 20-year water development program set a goal of 40,000,000 kw. of hydroelectric power, 30,000,000 kw. of which he said should be built by the government at a cost of from \$12,000,000,000.

Meanwhile, in a statement issued almost simultaneously with Secretary Krug's report, the Department of Commerce made a forecast that the United States probably will have to import 195,000 bbl. of oil per day by 1956 to meet rising demand. Reason

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One Penny's worth of BOROD tips 5 cutter bits

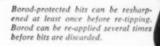
Increases bit life 8 times • Retains sharpness • Reduces continual bit replacements • Lowers power consumption • Cuts three times more kerf than unprotected bits in same period of time.

BOROD is a Stoody alloy containing fine particles of tungsten carbide in mild steel tubes. Its, diamond-like hardness and exceptional wear resistance keep undercutter bits on the job with many cost-saving advantages to operators. Material cost per bit is negligible—a single pound of Borod tipping as many as 4,000 bits. One welder can hard-face 400 to 500 bits per hour with a simple jig and ordinary oxy -acetylene welding equipment.

The complete story is available in our bulletin "Tipping Coal Cutter Bits With Borod." Your Stoody Dealer will gladly supply copies on request, or write direct.

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MEETINGS

- Seventh Annual Anthracite Conference: May 5-6, Lehigh University, Bethlehem, Pa.
- American Mining Congress: coal convention and expesition, May 9-12, Cleveland, Ohio.
- A.I.M.E., Central Appelachian Section: spring meeting, June 3-4, Blacksburg, Va.
- American Retail Coal Association: annual meeting, June 7-8, Hotel Cleveland, Cleveland, Ohio.
- American Coal Sales Association: annual convention, June 9-11, The Greenbrier, White Sulphur Springs, W. Va.
- Mine Inspectors Institute of America: annual meeting, June 12-15, Pittsburgh, Pa.
- Stoker Manufacturers' Association: annual meeting, June 13-14,
 French Lick Springs, Ind.
- Rocky Mountain Coal Mining Institute: spring meeting, June 27-29, Colorado Hotel, Glenwood Springs,

for the growing demand, the department stated, is the large production of automobiles and trucks, the shift by railroads from coal to oil and increased use of fuel oil for home and office heating. Only "a drastic change in the price relationship between oil and coal" can halt the rate of increase in the use of oil, the department said.

Coal and Oil Mix May Power Diesel Engines

A half-and-half mixture of powdered coal and fuel oil some day may drive diesel engines, according to Professor R. B. Rice, North Carolina State College, Raleigh, N. C. Mr. Rice already has built a test model diesel engine that runs successfully on the mixture but predicts that four to ten more years of work may be needed to put the development to wide commercial use. Experiments were started over two years ago with engines given to the college by the Navy after the end of the war.

C. & O. to Buy Steam Locomotives, Coal Cars

Ten compound mallet coal-burning steam locomotives, Type 2-6-6-2, and 725 seventy-ton hopper cars soon will be purchased by the C. & O. Ry., according to an announcement issued late in March. The railroad's plans were revealed when the L.C.C. granted permission to assume obligation and "acidity for \$5,150,000 of its equipment-trust certificates to help finance the purchase.

JOY CONTINUOUS MINER TO MAKE ITS BOW AT THE COAL SHOW ALONG WITH THE "HIDDEN PRODUCT"



Joy Continuous Miner in operation underground in a large mine in central Pennsylvania coal fields.

Following a long series of successful service tests under many different mining conditions, the revolutionary Joy continuous coal mining machine will be on display at the Coal Show — its first public appearance.

When inspecting this remarkable machine and noting its many ingenious features, give a thought to the "hidden product"—Timken tapered roller bearings—which, though they cannot be seen, make their presence felt in unmistakable terms: in freedom of rotating parts from friction and wear; in consequent economy of power; in radial, thrust and combined load capacity and ability to hold moving parts in constant alignment, resulting in greater endurance, longer machine life, and lower maintenance; in simplicity and economy of lubrication, thus saving time and reducing operating costs.

Altogether, 39 Timken bearings are used at the following positions; ripper head drive, ripper head idler, caterpillar drive, planetary unit and conveyor drives. The Joy Manufacturing Company knows from long experience that Timken bearings can be depended on for efficient, long and economical service wherever installed. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".



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Kittanning Council Awards 1948 Safety Banners

PRESENTATION of banners to three district mines in recognition of their 1948 safety records was a feature of the fourth annual banquet of the Kittanning [Pa.] Safety Council held last month. Roy Estep (rear), federal coal-mine inspector and president of the council, made the presentation. William Robertson (left), safety engineer, received the Class A banner for the Keystone Mining Co.: Max Powell, mine foreman, West Mohawk Co., the Class B banner; and Don McCraa, safety engineer, Freebrook Corp., the Class C award. Featured speaker at the dinner, attended by 400 mineworkers and 100 mine officials, was Dr. James Boyd, director, U. S. Bureau of Mines. Others addressing the group included George Dieke, president, Mine Safety Appliances Co.; G. W. Grove, supervising engineer, and M. J. Ankeny, chief, Coal Mine Inspection division, U. S. Bureau; and W. Garfield Thomas, deputy secretary, Pennsylvania Department of Mines.

Utah Coal Firm Offers Coal-Mining Scholarship

The United States Fuel Co., Salt Lake City, Utah, now offers a four-year scholarship for the study of coalmining engineering at the University of Utah, according to an announcement March 28 by S. J. Craighead, vice president and general manager of the company. The scholarship is worth \$400 per year for four years and provides for summer vacation employment with the company.

The first award will be made for the fall quarter, 1949. Sons of day-wage employees and of salaried employees whose pay is not over \$500 per month are eligible, provided either parent has completed five years or more with the company.

Majestic Collieries In First-Aid Program

Completion of a 100-percent firstaid training program by the 711 employees of the Majestic Collieries Co., Majestic, Ky., recently was announced by E. C. Lewis, general superintendent. The training was held under the supervision of G. E. Reid, safety engineer, U. S. Bureau of Mines, Norton, Va., and with the full cooperation of all mineworkers, U.M.W.A. officials and the Safety Committee of Local 6095.

Majestic Collieries Co. is the fifth large operation in the Pond Creek-Tug River Mining Institute to complete 100 percent first-aid-training programs. Since October, 1948, the Pond Creek Colliery, Williamson, W. Va., Eastern Coal Corp., Stone, Ky., Black Gold Coal Corp., Stone, Ky., and Emperor Coal Co., Freeburn, Ky., have completed the course, for a total of more than 3,500 employees with first-aid training.

Anthracite "Fire Chief" Burner Now on Market

The "Fire Chief," a new-type, low-priced automatic anthracite boiler-burner developed by the Anthracite Institute and manufactured by the Coal-O-Matic Co., Trucksville, Pa., now is available in a small 80,000-B.t.u. size and soon will be available in a 130,000-B.t.u. size. Announcement of the new units was made by the Anthracite Institute, March 30,

The "Fire Chief," using the crossfeed principle, feeds and burns anthracite across a simple, stationary When you're in Cleveland head straight for ...



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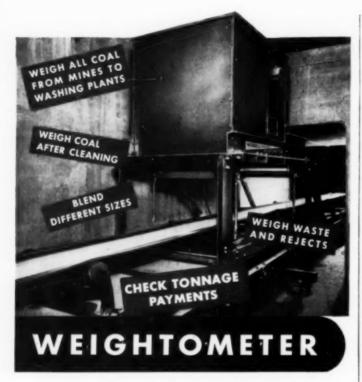
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EQUIPMENT APPROVALS

Six approvals of permissible equipment were issued by the U. S. Bureou of Mines in March, as follows:

Joy Mfg. Co.—Type CD26 drilling machine; one motor, 26 hp., 250 volts, d.c.; Approval No. 2-658; March 7.

Joy Mfg. Co.—Type PL12-2PN elevating conveyor; one motor, 7½ hp., 500 volts, a.c.; Approval No. 2-659A; March 18.

Lee-Norse Co.—Type MT6-5K/M greesing truck; two motors, 10 and 3 hp., 250 and 500 volts, d.c.; Approvels Nos. 2-660 and 2-660A; March 24.

Jeffrey Mfg. Co.—Type 61 Class 14 blower drive unit; one motor, 3 hp., 230 volts, d.c.; Approval No. 2-661; March 29.

Joy Mfg. Co.—Type 118U-11APG/H/L/T leading machine: two motors, 50 and 4 hp., 220/440/ 600 volts, a.c.; Approvals Nos. 2-662 and 2-662A; March 31.

Joy Mfg. Co.—Type PP3-2PE/F postpuller: one motor, 71/2 hp., 250 and 500 volts, d.c.; Approvals Nos. 2-663 and 2-663A: March 31.

perforated plate. Uniform feed is provided by a feed-deflector and a "free-floating" worm, which pushes an even layer of fuel onto a flat, rectangular fire bed. As the coal is fed over the plate, it burns to an ash and falls over the edge into an ash container, thus simplifying ash removal. All working parts are located outside the boiler. A standard '5-hp. motor provides all power needed. A built-in tankless coil provides year-round hot water.

The smaller burner, called the "C-1," is round and stands 52 in. high, 23 in. wide and 32 in. deep. The larger unit, the "C-2," is rectangular. Both units burn either rice or buckwheat. Present models can be connected to any type of radiator system. Warmair units will be available later on.

The "Fire Chief" will retail at prices competitive with those of equivalent home-heating units using other fuels, it is reported.

State Grants Funds for Coal-Gas Studies

Gov. Arthur B. Langlie, of Washington, signed a bill March 28 appropriating \$125,000 for building a pilot plant to study coal gasification, provided this sum be matched "in money or its equivalent" by "those interested in such studies."

The Coal Producers Association of Washington had sought a \$250,000 appropriation. The plan calls for location of a pilot plant either on the campus of the state university at Seattle or at the nearby plant of the Seattle Gas Co. Coals from all parts of the state will be studied to determine their gasification characteristics.



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OVERHEAD TROLLEY LINE MATERIAL • SPECIAL TYPE DISTRIBUTION BOXES • GAS TIGHT CABLE CONNECTORS

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CINCINNATI 25 DHIO



E. H. JOHNSON (standing), speaker at the Big Sandy-Elkhorn meeting. At Mr. Johnson's left—Seth H. Kegan, institute president and superintendent, Mine 214, Consolidation Coal Co.; and J. H. Mosgrove, institute secretary-treasurer and safety director, Big Sandy-Elkhorn Coal Operators' Association.

Roof-Support Talk Marks Big Sandy-Elkhorn Meet

Two methods of roof support eliminating timber legs and using Kennametal bits extensively were described by E. H. Johnson, sales manager, mining division, Kennametal, Inc.,

speaking at the dinner meeting of the Big Sandy-Elkhorn Coal Mining Institute, Pikeville, Ky., March 25.

One method of roof support, now used in at least six states, involves drilling vertical or slanting holes into the roof and fastening rods, usually 4 in. in diameter, in the holes by expansion bolts or tapered wedges that clamp crossbars of wood or steel tight against the roof, Mr. Johnson said. The holes are drilled by air hammer and the size of expansion bolts ranges from 1% to 1% in.

The second method is to use threepronged center-pilot type SDTS bits to drill holes 5 to 7½ in. in diameter in the ribs, next to the roof, 18 in. deep on one side and 36 in. on the other, to receive a crossbar and allow 18 in. of bearing on each side.

About a generation ago, Mr. Johnson said, German scientists learned that carbides of certain metals such as tungsten could be sintered in a hydrogen atmosphere at high temperatures with cobalt as a binder to form metallic-cemented carbides hard enough to cut cast iron in a lathe. Some years later, he continued, an American scientist, Phillip M. Mc-Kenna, improved the technique by sintering in a vacuum to secure greater strength and uniformity of product. American patents were obtained and the product was named Kennametal. Tools of that material machined nearly 80 percent of the World War II projectiles made in America.

In addition to technological developments in drilling, Mr. Johnson touched briefly on human relations, pointing out that improved equipment makes the work easier for the miners. As for customer relations, he declared that the coal industry has done a poor job of selling itself to the public. Spe-



The M-118-D is a new Automatic Recording Weigher that prints and visually indicates dormant loads with rapidity and accuracy. The price fits the budgets of small business, yet meets the most critical demands of large industrial jobs.

The capacity is from 1,000 to 100,000 pounds. Accuracy and precision are built into this Automatic Weigher.

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You can depend on Collyer Mining Cables to deliver full power to your electrical equipment year in and year out. Conductors and insulations are designed for maximum carrying capacity. Top quality materials go into the insulations, providing high dielectric strength and economical, trouble-free power transmission. Outer jackets are built to withstand tough service in the mine: heat, abrasion, moisture, oils, acids, and alkalies. And for extra safety, Collyer Mining Cables meet the rigid safety specifications of the Commonwealth of Pennsylvania.

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cifically, he listed a number of false impressions and one he termed "just a plain lie" which were given the public by a recent article in the Saturday Evening Post, entitled "The Bloody Price of Coal." From the March 26 issue of the Post, Mr. Johnson read the letter of Ivan A. Given, editor, Coal Age, which offered proof that marked progress was made in mine safety from 1921 to 1941, before federal inspection was instituted. Mr. Johnson stated that the Post editor's comment on Mr. Given's letter attempted to discredit the improvement in the fatality rate per million manhours worked by saying that one-fourth of our coal now is mined by safer methods.

Mr. Johnson also presented two technicolor films showing fully mechanized potash mining in New Mexico and the strip mining of coal in pits in several states.

Newsman Reviews Miners' Health and Welfare Fund

Now spending \$2,000,000 weekly for benefits to bituminous miners and their families and another \$200,000 to anthracite miners and their dependents, the bituminous and anthracite welfate and retirement funds already are straining against the limits of the 20c.-per-ton levy on coal production and still are short of John L. Lewis' goals, says A. H. Raskin, New York Times writer. Mr. Raskin's report, published March 29, was one of a series of studies now being released on union welfare plans in coal and other industries.

Mineworker officials, however, are confident of Mr. Lewis' ability to win more money for the welfare funds and therefore are not worried about possible failure to fulfill the union's program, Mr. Raskin observes. "No one seriously expects Mr. Lewis to turn back from the course he has charted," Mr. Raskin continues. He reports also that coal operators are expecting Mr. Lewis to demand a levy of 40c. a ton when wage talks open in May.

Reviewing his conversations with welfare-fund officials, administrators and others, Mr. Raskin reveals the following facts, as stated to him:

 Over 250,000 coal miners and dependents have been helped by the bituminous fund since it paid its first benefits in June, 1947. Total expenditures exceed \$85,000,000.

Fifteen thousand miners now are receiving retirement payments, having reached the age of 62 with 20 years or more of work in the mines.

 Average age of retired miners is 66 and only a "negligible percentage" of able-bodied miners over 62 have asked for pensions.

 In addition to pensions, benefits now being paid include: up to \$60 monthly to disabled miners, with additional payments of \$20 for a wife and

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\$10 for each dependent child; up to \$60 a month to widows and \$25 to orphans; death benefits of \$1,000 to widows.

 Plans for medical, hospital and health care, including preventive treatment, are fast taking shape under direction of Dr. Warren F. Draper, the fund's medical director.

Cooperative plans have been effected with several hospitals for special treatments, notably of paraplegics, 218 of whom already have been placed in rehabilitation centers.

7. Officials of the fund hope to enter into contracts with local doctors and hospitals in 26 states and the American Medical Association has recommended that state medical associations set up liaison committees to work with the 10 medical field offices now being set up by the fund.

Sentiment among government officials, as cited by Mr. Raskin, adds up to fear that the welfare fund will be unable to fulfill its commitments if coal markets decline and that the government may therefore be asked to take over the program. For a precedent, they point to the government's assumption of the railroad workers' welfare and retirement program in the 1930's.

More Coal Still a Big Need in Western Europe

Increased coal production since the start of the Marshall Plan, together with the use of more petroleum, has eased shortages of fuel for essential industries and services in Western Europe. However, coal production in Europe must be pushed still higher to relieve shortages in other industries and to meet demands which will grow as Europe's industrial output expands. Those are the views of Economic Cooperation Administration officials, who on Apr. 6 reviewed European recovery through the first year of the Marshall Plan.

Goals for the year ahead are greater supplies of coal from participating nations and improvement in productive efficiency and distribution, ECA officials said. Better supplies and more efficiency will cut prices of coal and manufactured goods and thus will check inflation, they pointed out.

Improvements in coal output have been gained by adding manpower, boosting food allocations, putting more consumer goods on store shelves, granting priorities for mining machinery and equipment and improving general economic conditions, it was stated. Problems remaining to be solved include rehabilitation of mines and machinery, cutting absenteeism and labor turnover, building better housing for miners and drawing younger men to the industry.

Rebuilding the European coal industry can be measured by the cutback in imports from the United States, the ECA said, citing requirements of 18,000,000 tons in 1948 against 37,000.

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000 tons in 1947. In fiscal 1948-49 import needs will be reduced to an estimated 16,000,000 tons; in 1949-50, 10,000,000 tons.

NCA Training Director Reports Good Progress

"Very definite progress" in vocational and professional training for coal mining has been reported to the National Coal Association by Maurice D. Cooper, director, mining engineering education, who recently summarized results of his work at a meeting of the NCA Vocational and Educational Committee, Mr. Cooper pointed out that he has discussed opportunities in coal mining with the faculties and, where possible, the student bodies of 33 colleges that offer degrees in mining engineering. Of these colleges, 17 give courses in coal mining, he said.

The committee meanwhile discussed ways of attracting the interest of young men to coal mining and furthering the work at high-school and vocational-school levels as well as the college level. The committee urged that more scholarships be offered for mining engineering and that the industry follow through by letting the public know about these educational opportunities. It was pointed out that Bituminous Coal Institute can help publicize educational opportunities and win public acceptance for coal mining as a vocation.

FPC Grants 1,150 Miles of Gas Pipeline Extensions

Two authorizations issued March 31 by the Federal Power Commission will extend natural-gas pipelines a total of about 1,150 miles and boost daily output of the two companies concerned to a total of 1,390,000,000 cuft.

Construction of Texas Eastern Transmission Corp.'s new expansion program is expected to begin immediately. The program includes 177.5 miles of 26-in. pipeline looping the Big and Little Inch lines near Lebanon, Ohio, to a point about 20 miles east of Summerfield, Ohio; 69.5 miles of 20-in. pipe to loop two sections of the Little Inch line in Texas and Louisiana; and 100 miles of 16-in. pipe from Lavaco County, Tex., to the Baytown, Tex., terminus of the Little Inch line. Four new compressors totaling 17,500 compressor hp. will be built. Total cost is estimated at \$24,052.000.

Texas Gas Transmission Corp. will start work immediately on an 800-mile line to carry gas from Texas to Ohio. Cost will be about \$73,500,000 and gas will be available to customers by winter, 1949-1950, at which time deliveries are expected to be about 304,000,000 cu.ft. daily. Ultimate capacity of the new line will be 400,000,000 cu.ft. daily. Ten compressor started.

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tions with total installed horsepower of 68,800 will be installed. The line will extend from the East Carthage field in Texas to a point near Middletown, Ohio, where it will connect with the Big Inch pipeline of Texas Eastern Transmission Co.

NCA Safety Committee Plans Broader Program

An expanding scale of safety work was outlined and announced at a recent meeting of the Safety Committee, National Coal Association, in Washington. The new program includes the following: continuing active opposition to mandatory federal mine-safety legislation; continued promotion of safety through education, research and cooperation; active cooperation between companies and state mining departments; and safety assistance along cooperative lines from federal agencies. The new program is subject to the further approval of the Safety Committee.

Further items in the committee's program will be detailed later to company safety directors and other officials in charge of accident prevention, it was announced.

Foreign Developments



MELBOURNE-The first shipment recently has arrived in Australia from Germany of 300 tons of equipment for a new bucket-wheel dredge for stripmining coal. After equipment still to come has arrived, the new dredge will be assembled at Yallourn under the supervision of German engineers and will be ready for operation before the end of the year. Costing over \$600,-000, the dredge is expected to mine over 500 t.p.h. Two additional dredges for removing overburden and loading coal now are being manufactured in Australia from German drawings acquired since the war by the Allied Occupation.

The timely use of dry ice has prevented a serious fire which might have burned through one of Australia's largest mines producing coal for gas—the Aberdare Central mine. Cessnock, New South Wales. Although the practice has begun only recently, mining experts believe that dry-ice treatment to control hot mines may save millions of tons of excellent gas-making coal in the big Greta seam. First dry-ice experiments were made in 1943,

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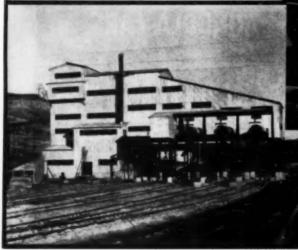
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COAL AGE . May. 1949

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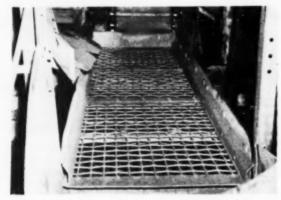
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"Twe seen them all — Seco's the best for accurate sizing and smooth operation." John B. Gordon, Gordon Coal Company, East Bernstadt, Kentucky. This single-deck Seco vibrating screen takes about 95 tons per hour. Large lumps that have to be scalped off do not cause any undue stress or strain because a Seco screen is built to take it. The feed end cannot bog down because of the Equalizer Assemble which rigidly connects the live screen body to the base frame."

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In Canada, United Steel Corp. Ltd., Toronto, Ont.

after an underground explosion at Aberdare Central mine. The mine was reopened last year after over three years of reclamation work. If the treatment proves successful, it may be possible to reopen hundreds of sealed areas in mines producing gasmaking coal.

ROME—Italy expects to import 11,800,000 tons of coal in the fiscal year 1949-50 at a cost of \$161,000,000. This is an increase of 500,000 tons and \$20,000,000 over 1948-49. However, imports from the United States will be scaled down and those from European countries increased. The total of \$161,000,000 will be spent as follows; \$61,000,000 for 5,500,000 tons from the United States; \$38,800,000 for 3,500,000 tons from Great Britain; and \$61,200,000 for 6,000,000 tons from Germany, 3,400,000 tons from Poland and Eastern Europe and 900,000 tons from other European nations.

Meanwhile, further increases in Italian output will be sought through improved mining methods and more machinery, with the hope that by 1952-53, the last year of the Marshall Plan, Italy will have returned to prewar status, when all her coal imports, came from Europe. Sardinian coal production, for example, is expected to increase from 862,000 tons in 1948 to over 2,000,000 tons in 1952-53.

Coal Publications

Tests of the Ignition of Natural Gas-Air Mixtures by Permissible Expositions in the Experimental Coal Mine, by H. P. Greenwald, Irving Hartman, H. C. Howarth and John Nagy. U. S. Bureau of Mines, T. P. 716. 15c., Supt. of Documents, Government Printing Office, Washington 25, D. C. Results of 654 tests of six brands of permissible explosives using 3-lb. charges for boreholes in the presence of an explosive mixture of 8 percent natural gas and air. Hazards added by the 3-lb. charge were found negligible. This report lists safety precautions to be used with the large charge.

Hazards of Black Blasting Powder in Underground Coal Mining, by D. Harrington and R. G. Warneke. U. S. Bureau of Mines, I. C. 7492. 29 pp. plus 2 pp. of illustrations. 8x10³½-in.; paper; mimeo. Free, Publications Distribution Section, 4800 Forbes St., Pittsburgh, Pa. Dangers in the use of black blasting powder cannot be eliminated but can be somewhat reduced by methods suggested in this report.

Safety and Performance Characteristics of Liquid-Oxygen Explosives, by W. E. Tournay, F. M. Bower and F. W. Brown. U. S. Bureau of Mines, Bulletin 472. 88 pp. 6x94-in.; paper. 30c., Supt. of Documents, Government Printing Office, Washington 25, D. C. The greatest hazard in using liquid-





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oxygen explosives is fire, although there also is some sensitivity to mechanical impact and slight sensitivity to frictional impact. The tendency for burning to turn into detonation varies among different types and is an important factor in safety. In addition, the wrapper as well as the absorbent must be considered in evaluating relative safety of different types. This bulletin includes standards for evaluating safety characteristics.

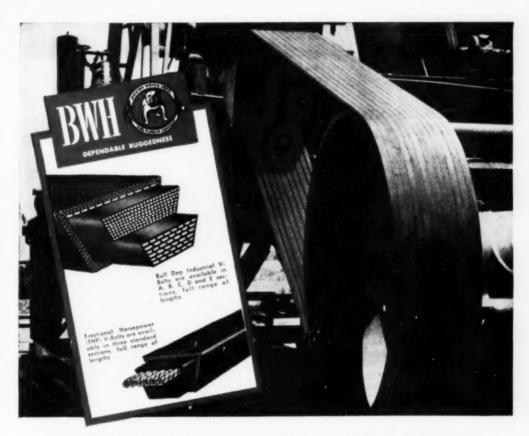
Performance of Residential Chimneys, by L. B. Schmitt and R. B. Engdahl. Reprinted by Bituminous Coal Research, Inc., 912 Oliver Bldg., Pittsburgh 22. 8 pp. 8%x11-in.; paper. Free. Results of tests on four different types of residential chimneys under various conditions. Includes a method for calculating available draft for a small chimney

Water Pools in Pennsylvania Anthracite Mines, by S. H. Ash, W. L. Eaton, Karl Hughes, W. M. Romischer and J. Westfield. U. S. Bureau of Mines, T. P. 727. 78 pp. plus illusand maps. 57ax61a-in.: trations paper. 55c., Supt. of Documents, Government Printing Office, Washington 25, D. C. An advanced stage of de-pletion of anthracite reserves has been reached. A large part of the original estimates of reserves now is unminable because of water impounded in deep mines and abandoned strip pits. Bootleg mining also has added to water problems. This Technical Paper includes maps, plans cross sections and longitudinal sections of underground water pools, data on the number of pools in each field, surface altitude of the water in each pool, volume of water and the position and altitude of overflow points.

Preparation Facilities

Pond Creek Pocahontas Co., Mine No. 2, Carver, Ky.—Contract closed with Fairmont Machinery Co. for complete coal-preparation plant to clean 5x16-in. coal by the Chance process; bins and blending facilities to be provided for all sizes below 2 in., with crushing and screening to reduce the 3x2 and 2x% to minus-%; sizes to be shipped are plus-5, 5x3, 3x2, 2x14. 1 14 x %, % x 1/4 and 1/4 x 0; capacity, 400 t.p.h., mine-run feed.

Pond Creek Pocahontas Co., Bartley No. 1 mine, Bartley, W. Va .-- Contract closed with Fairmont Machinery Co. for addition to present plant to clean 3x % -in. coal at the rate of 210 t.p.h. by the Chance process, with Chance cone also receiving the crushed rejects from the present calciumchloride washer; after cleaning, the 3x% is to be separated into 3x1%, 14x4. 4x4, 4x4 and 4x0, with facilities provided to remix these sizes into any size slack or modified slack.



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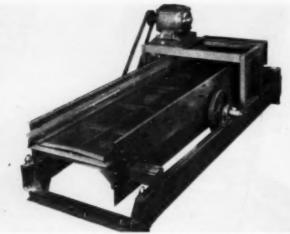
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Equipment News

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VIBRATING SCREEN—A new line of small-size light-duty vibrating screens known as "Mighty-Mite" vibrating screen, has been announced by The Screen Equipment Co., Inc., Buffalo 21, N. Y. Particularly designed to handle a variety of small screening jobs, the units are available in single- and double-deck models, 1½ and 2 ft. wide, in lengths of 3, 4, 6 and 8 ft., and in triple-deck models in the smaller sizes. The screen produces a positive eccentric action and a maximum vibration amplitude of 3/16 in. The Mighty-Mite units require 1 to 2 hp., operate at speeds up to 1,150 r.p.m. and at capacities up to 15 t.p.h. They may be rigidly mounted or hung from an overhead support.



EARTHMOVER—The E-40 Tournarocker, a rear-dump wagon powered by a 240-hp, two-wheel prime mover, has been announced by R. G. LeTourneau, Peoria, Ill. The unit has a 41-cu.yd. capacity and a rear dump that is multicable controlled by an electric motor which tips the body beyond vertical position for fast dumping. According to the manufacturer, features include drive wheels up front for more pulling power, four-wheel disk-type air brakes and positive-control electric steering permitting a 90-deg, turn in an 18-ft. radius. The Tournarocker has a 16ft. 8in. x 10ft. body and is 12 ft. high.

ELECTRIC MOTORS - The Louis Allis Co., Milwaukee, Wis., has announced a new line of integral-horsepower single-phase motors which feature, in place of the centrifugal switch formerly used to disconnect the starting condensers from the line after the motor is up to speed, a voltage relay mounted in the control cabinet fur-nished with the motor. The control cabinet also includes an across-theline starter and the necessary capacitors, which permits the removal of the capacitor enclosure and mounting these component parts away from the heat and vibrations of the motor, according to the manufacturer. new motors are built in capacitorstart induction-run types in ratings of 1 and 11/2 hp., and in capacitor-start capacitor-run types in rating of 2, 3, 5, 7½ and 10 hp. The new line is available in open drip-proof, splashproof, totally-enclosed, fan-cooled and explosion-proof construction. The motors are identical in appearance to polyphase motors of the same enclosure and feature the same construction, it is reported.



ARC-WELDERS—New line of a.c. arc-welders, featuring increased welding range and stepless precision current control, announced by General Electric's Welding Divisions, Schenectady 5, N. Y., includes 200-, 300-, 400- and 500-amp. models for indoor manual welding; 750- and 1,000-amp. models for machine and submerged melt welding; and a special 200-amp. model for light-duty job-shop welding. The 300-, 400- and 500-amp. models also are offered in weather-resistant enclosures with Idlematic control for both indoor and outdoor operation. Dual current ranges and

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This 96-page illustrated book is especially written for the machine operator who handles wire rope constantly on his job. And its handy size—43%" x 73½"

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Cushions the heavy, abrasive lumps on a bed of fines, and prevents rollback of lumps on steeply inclined belts.

No motors, speed reducers, gears, belts, etc., to maintain

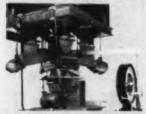
Write for literature.

When you're at the Coal Show — see the Syntron Exhibit, Booth 417, in The Arcade.

SYNTRON CO.

975 Lexington

Homer City, Pa.



"Automatic" BATCH WEIGHING Scale—Controlled Vibratory Feeders



BIN VIBRATORS
Make Stubborn Materials Flow Freely



VIBRATORY FEEDERS
Up to Hundreds of Tons per
Hour — Rheestat Control of Flow



VIBRATING SCREENS
Wet or Dry — Single or
Multiple Decks



"CONSTANT WEIGH" FEEDERS Accurate, Continuous Feed by Weight

increased adjustment overtravel on the new machines are said to provide extra low-current range with high maximum short-time output. Other features include newly designed steel housings, built-in power-factor correction and up-draft fan-assisted ventilation. Bulletin GEA 5279 is available from General Electric.



STEEL HARDENING — Hardening drills, chisels, gouges, cutting tools or any carbon or high-speed steel to any desired depth in minutes is now possible with its new "Hi-Speed-It" compound, according to the Wilson Carbon Co. Inc., 60 East 42nd St., New York 17. Ordinary wire nails and common reinforcing rods hardened this new way can be driven through automobile spring leaf with no apparent dulling, as illustrated, the company reports. The process is simple and no special skill or equipment is required, it is anid.



TRUCK TIRE—A new Rock-Logger tire, designed for use both off-the-road and on the highway, has been announced by The B. F. Goodrich Co., Akron, Ohio. Featuring a new casing, the tire permits easy steering and will prove worthwhile on front wheels of many trucks now carrying super-traction tires on rear wheels, according to the manufacturer.

TROLLEY TAPS—New trolley taps and cable protectors using a threaded stud on the fusetron or fuse instead

KANAWHA PRODUCTS

FOR THE COAL INDUSTRY

... at the HEAD HOUSE

Mine Cars

Car Hauls

Trip Feeders

Hillside Conveyors Structures

Rotary Car Dumps

Weigh Baskets

Storage Bins

Incline Drums

Monitors

Sand Driers

Slate Dumps

... at the TIPPLE

Shaker Screens

Blending Feeders

Vibrating Screens Screen Plates

Coal Washers

Conveyors

Elevators

Structures

Loading Booms

Picking Tables

Loading Chutes

Car Retarders

Complete Preparation Equipment Engineering Service

KANAWHA

CHARLESTON, W. VA.



SAVE UP TO 25¢ PER TON WITH

The timbers in your mine represent plenty of "silver" when you consider that this one item represents 40% to 60% of your supply bill. If you let timbers ROT, you might just as well throw away a shovelful of your hard earned profits every day in the week. We can cut your maintenance cost by making mine timbers LAST LONGER. You save on timber! You save on replacement! With Osmose you can make ANY wood species, even beech, gum, hickory, ash, elm and maple, into long lasting timbers.

SEE OUR EXHIBIT AT AMC COAL SHOW . BOOTH A-132

We can furnish you with OSMOSE TREATED TIMBER We can supply you with Osmose-treated square-sawed, slabbed or round timbers, ties, collars, posts, lagging, caps, wedges or tipple timbers from one of our treating plants. These select October Streated with the contraction of the contractio uppie timbers from one of our treating praints. Enese select OSMOSE-treated timbers will render many years of EXTRA



We will OSMOSE-treat your own timber at our nearest treating plant. Remember, this treatment can be applied to ANY wood species, even beech, gum, hickory, ash, clm and maple.

We will furnish MATERIALS and YOU can treat your own timber By constructing an inexpensive vat and following directions, you can treat your own green timber with OSMOSALTS.

WRITE FOR COMPLETE DETAILS ON THE TYPE OF OSMOSE SERVICE YOU PREFER

OSMOSE WOOD PRESERVING COMPANY OF AMERICA, INC BUFFALO, NEW YORK

Representatives in: Pittsburgh, Denver Birmingham Ala Stallings & Clarksburg, W. Va., and New York City

of the usual ferrule-type connection have been announced by Mosebach Electric & Supply Co., 1115 Arlington Ave., Pittsburgh 3, Pa. The new construction is said to make an almost solid connection between the hook-end fuse holder and the cable-end fuse holder, thereby eliminating burning of the fuse. The threaded-stud connection not only makes a better electrical connection but also increases the strength of the entire trolley tap, the company reports. Both trolley taps and cable protectors are enclosed in heavy micarta tubing and the trolley taps also have heavy fiber guards just below the hook. Connections are of high-quality bronze.



MAGNETIC PULLEY-New permanent magnetic pulley incorporating a special design of Alnico metal poles, which are self-energized and require no electric current, has been an-nounced by Stearns Magnetic Mfg. Co., Milwaukee 4, Wis. The pulley is designed for uniformly high magnetic strength over the entire face and, since no wiring or electrical connections are needed, can be operated under all atmospheric and temperature conditions, the manufacturer states. More than 50 sizes are available, from 12 in. in diameter by 12 in. wide, to 30x60 in.

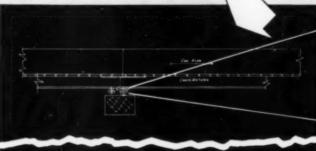
TRUCKS - International Harvester Co., Chicago 1, has announced two new diesel-powered trucks, Models KBD-12 and KBRD-14, with ratings of 31,500 and 35,000 lb. g.v.w., respectively. The KBD-12 is available in four wheelbases, 155, 161, 179 and 215 in.; the KBRD-14 in 161-, 179- and 215-in. wheelbases. The KBD-12 was designed for heavy-duty over-theroad operation and is said to be especially suited to tractor-trailer work. The KBRD-14 is a heavy-duty truck for off-highway service. Both are powered by the new HRB-600 Cummins diesel, developing 165 hp.

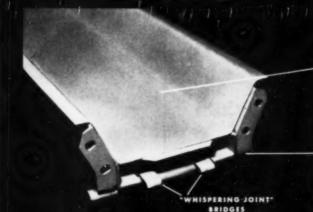
CAR SHAKER-Allis-Chalmers Mfg. Co., Milwaukee, Wis., has announced a new car shaker for emptying coal. cinders and other granular materials from drop-bottom hopper cars. Weighing approximately 5 tons, the new unit, which is designed to fit all sizes of gondola cars, has an all-welded 11x5x4-ft. 4 in, steel body, which is lowered to rest on the carbody flanges by a hoist or crane. Vibration is transmitted through an eccentric

Interchangeable

Eliminate Flight Hanging-Give Easier Handling and Longer Wear

THESE ADDED FEATURES!





PATENTED & PATENTS PENDING

"Whispering Joints"—
No Hanging. Note from diagram how the interlocking "bridges" give the effect of continuous—unbroken trackway. Contrast this with the old type butt joint—flights in the return track of LONG pans do not knock, jerk or hang at the joints. These "Whispering Joint" bridges gently lift the flight from the return track of one pan into the return track of the other.

One Point Suspension-

Solid Joints-the larger diameter pipe at the female end of the pan supports the joint. The male end of the connecting pan is supported on the lip plate of the female end and any vibration seats the joint. Added pans will literally fall into place, making solid joints with one-point suspension.

Lighter Weight - Longer Wearing:

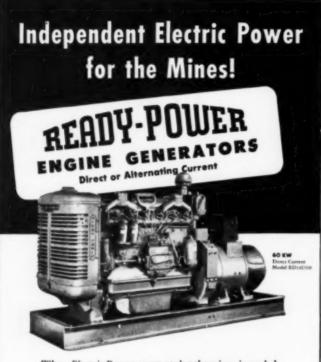
Alloy abrasion-resisting steel makes possible reduction of weight up to 25 pounds per pan with no loss in strength. The harder steel in these easier handling pans polishes to a smoother surface which ofchain and material, and assures longer life.

More Return Track Area:

Wearing area has been increased where needed. Wider abrasion resisting steel track angles, and the extra area at the joints provided by the "Whispering Joint" bridges doubles the effective wearing area at the critical point. Return track wear equals through wear, thus insuring against h'dden failures.

SUPER MINE CAR CO. FAYETTEVILLE, W. VA. LONG pans with "whispering joints" that do not catch flights, and SUPERFLITE conveyor chain with flights that stay straight and run free make an unbeatable combination for chain conveyor efficiency. Both are standard equipment on LONG conveyors and interchangeable on other standard 12" types.

> See LONG conveyors, LONG conveyor pens and SUPERFLITE Chain at Cleveland Booth A-412.



Where Electric Power-generated at the mine-is needed -Ready-Power Standardized Engine Generators are available for early delivery. Built for this service from standardized designs developed after years of experience, Ready-Power will give you-QUICKLY-Dependable, Low Cost, Electric Power.

Ready-Power Engine Generators are powered by International Harvester Engines—sold and serviced everywhere by International Harvester Power Unit Dealers.

Rated at 71/2 to 85 KW AC or 71/2 to 100 KW DC.

The READY-POWER Co. DETROIT 14, MICH.

MORE HAULAGE FOR 20% LESS BATTERY CAPACITY

Squide know-action; better trackability, Fögeling genwar; togs gewar; togs genwar togston, duste acting feoferable or acceled for quick stopping, inguestati, bening teating magabines, Brake shows that legion wheels, idea to know action; a Adjustable Timeter action;



Nuckiest transmission in any oberage battery lecomotive solidities (solidities) teacherous the regular auto off change every 6 months, strong Simple design. Lew maintenance cest. Backed by over 25 years of experience with the cost. Backed by any access the cost. Backed by a cost.

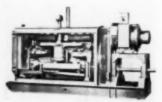
GREENSBURG "MONITOR"

Franklin County Coal Corporation at Royalton and Herrin, Illinois, have 12 of our Monitor type, storage battery locomotives.

All Greensburg Locomotives are CUSTOM-BUILT to your requirements

THE GREENSBURG MACHINE CO. 101 STANTON ST. GREENSBURG, PA.

shaft mounted within the shaker bond on heavy-duty bearings. The unit is driven by a totally enclosed, hightorque, rubber-mounted motor, located inside the shaker body for full protection.



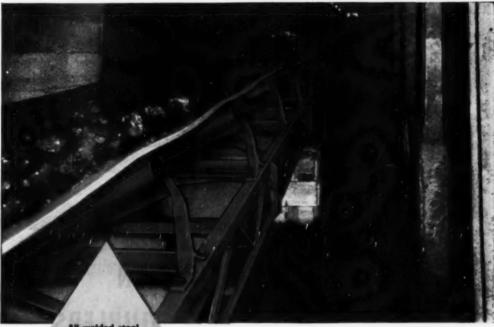
DIESEL MECHANICAL - ELECTRI-CAL UNIT-What is reported to be the first "packaged" diesel-power unit capable of simultaneously providing both electricity and mechanical driving power has been announced by the Murphy Diesel Co., Milwaukee 14. Wis. With the new "Mech-Elec" unit, any fixed or variable proportions of mechanical and electrical loads are possible, providing the total does not exceed the engine's rated capacity and the electrical load does not exceed 50 kw., it is said. The generator can be operated without engaging mechanical drive. Two models are currently available: Model ME-6, rated at 135 hp. continuous and 160 hp. intermittent; and Model ME-66, rated at 150 hp. continuous and 180 hp. intermittent. Both have 50-kw. generators.



GLOVE—A new heavy-duty glove for handling small castings, rough stock, grinding and similar work has been added to its safety clothing line, according to the American Optical Co., Southbridge, Mass. The glove is made of specially treated chrome-tanned cowhide for long wear, and features a canvas back with elastic strap to overcome hand fatigue, steel-sewed seams, an improved palm surface and a reinforced thumb crotch.

INDUSTRIAL PAINT—New Stonhard Millwite is reported by the Stonhard Co., 1306 Spring Garden St., Philadelphia 23, to be a heavy white

Barber-Greene



Belt Carriers



Available in roller, ball or plate bearings "Feur-pass" grease seal prefers bearings

EASY TO CHOOSE . . . EASIER TO USE!

Barber-Greene "pre-engineering" simplifies your selection of the right, most economical belt conveyor set-up for your jobs. Standardized units—carriers, frames, take-ups, drives—are factory aligned, interchangeable. You can easily choose the units you need to make up a complete conveyor that's especially fitted to your material-moving problem. And, when they're delivered on the job, you'll find them plainly marked for quick installation with a minimum of "blueprint" work or on-the-spot fabrication. To gain these two big advantages—that have saved money for hundreds of Barber-Greene users—see your Barber-Greene distributor.



BARBER-GREENE COMPANY · AURORA, ILLINOIS

Constant Flow Equipment



LOADERS

PERMANENT CONVEYORS

PORTABLE CONVEYORS

COAL MACHINES

STATE OF

BITUMINOUS PLANTS



FINISHERS



DITCHE



Size of car makes no difference in the working advantages of Willison Automatic Couplers. For large cars or small ones; they give you maximum safety, faster handling and lower maintenance cost.

Safety—Willison Automatic Couplers can be operated entirely from the side of the car, eliminating necessity of worker going between cars.

Speed—Completely automatic operation speeds up coupling—greatly facilitates gathering and shunting. Willison Couplers are always ready to couple, operating just as readily when cars are reversed in position.

Long Life—Stresses of draft and buffing are See Willison Automatic Couplers at Booth 634, during 1949 Coal Convention and Exposition, Cleveland, Ohio. received directly by coupler body without interposition of any moving part. Two essential parts, the head and the lock, do the work. Sturdy construction results in greatly reduced coupler and car maintenance.

These advantages of Willison Automatic Couplers have been proved for over twenty years by leading mine operators. We are ready to work with you or your car-builders in the selection of Willison Automatic Couplers for your mine or industrial cars.

NATIONAL MALLEABLE AND

Cleveland, Ohio



semi-paste titanium-dioxide paint with exceptional hiding and coverage qualities. It may be applied to any surface with either brush or spray and can be tinted as desired, it is said. Folder available from Stonhard.



POWER WHEELBARROW — Recent improvements on its "Moto-Bug" announced by the Kwik-Mix Co., Port Washington, Wis., include an optional 4-ft. stake platform body that is easily interchanged with the 10-cu. ft.-capacity hopper body; an optional riding step for the operator; and a dual wheel on the direct steering mechanism. The flatbed platform, which may be tilted for unloading, has a 1,200-lb. capacity for truck handling of loose loads, skids and bins. The Moto-Bug is powered by a standard-make 4-hp. gasoline engine, at speeds from 1½ to 4 m.p.h., forward and reverse.



HOISTS—A complete new line of Auto-Bloc lightweight heavy-duty hoists has been announced by David Round & Son, Cleveland 5, Ohio. According to the manufacturer, the units, while matching conventional light-duty units in portability, incorporate all the strong construction features essential to heavy-duty work. A simplified hoisting mechanism re-

Designers, Builders Erectors

OF

MINE CAR ROTARY DUMPERS

CAR SHAKERS

FABRICATORS OF SPECIAL WELDMENTS, MINE STRUCTURES AND EQUIPMENT

EASTERN CONSTRUCTORS INC.

PLANT: GRISWOLD ST.

WARREN, OHIO



This flexible air tubing is ready for immediate, easy installation. On account of its flexibility, it can be put up or taken down in a fractional part of the time required by more rigid means of face ventilation.

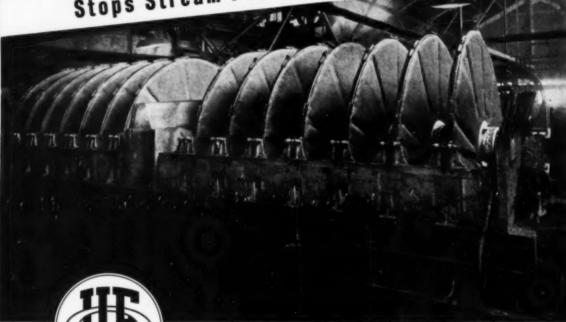
Write for free sample and full information

BEMIS BRO. BAG CO.

412 Poplar Street, St. Louis 2, Mo.

AMERICAN CONTINUOUS VACUUM FILTER

Stops Stream Pollution—Economically!





What's the situation in your state now about allowing solids to pass down stream from the washing? Any legal restrictions?

Why not stop this stream pollution positively . . . at low cost . . . and at the same time reclaim water for reuse.

For this anti-pollution job, we recommend the American Continuous Vacuum Filter which offers exceptionally high filtering capacity for floor and building space required. It's a low speed, automatic unit requiring little attention and maintenance. Numerous companies already have this filter, reporting excellent results from the standpoint of both efficiency and economy.

Word to our nearest office about your stream pollution and fine coal dewatering problems will bring prompt attention.

"40 years of filtration experience . . . the safeguard behind all Oliver United products."

New York 18, N. Y. 33 West 42nd Street

San Francisco 11 California

Chicago 1, Ill. 221 N. LaSalle Street

Western Sales Division Oakland 1, California 2900 Glascock Street

Sales & Manufacturing Representatives: E. Long Limited Orillia, Canada

Factories:
Oakland, Calif. • Hazleton, Pa.
Orillia, Canada
Melbourne, Australia

OLIVER UNITED FILTERS INC.

ABW TRANSMISSION OIL FILTER





. . . in large and small coal preparation plants . . . for all types or grades of coal.

Unique wedge-shaped members promote maximum drainage in washing, reduce clogging and give perfect rigidity to the screens. In service here and abroad. Cambri-



Wedge has proved to give up to 4 times longer life than other type screens.

Cambri-Wedge Screens are available in a wide range of metals, including stainless steel with Flat or the super-efficient Riffled Surface and with mesh openings from .005" up.

A'so available, Cambri-Wedge Wire Conveyor Belts.

FREE FOLDER! See how Cambri-Wedge Screens can save you moneyspeed washing or classifying-write today. Also ask about regular waven stainless screens in square or oblong mosh or weave.

There's A Cambridge Sales Engineering Office Near You



OFFICES IN PRINCIPAL INDUSTRIAL CITIES



ELECTRIC SHOVEL-New Marion 93-M Ward-Leonard all-electric shovel announced by Marion Power Shovel Co., Marion, Ohio, has a 21/2-cu. yd. dipper and 28-ft., boom as standard equipment and is designed for heavy-duty, longlife service on a variety of excavating jobs. Smooth, easy cushioned operation of the unit is secured with the electric control of all motions, according to the manufacturers. Swing, hoist and crowd machinery are powered by separate motors. The motor generator set consists of an induction driving motor directconnected to three d.c. Ward-Leonard generators designed for variable voltage control in line, and an exciter, all mounted on a self-supporting base. The motors reportedly are the latest mill type, 600-line, shunt-wound, 230-volt, d.c., and possess exceptionally low armature inertia and high overload capacity.



DIESEL ENGINES-Harnischfeger Corp., Diesel Engine Division, Port Washington, Wis., has announced a new 2-cycle diesel engine that is said by the manufacturer to combine the features of medium and high crankshaft speeds, satisfactory piston speeds, and an over-all lighter weight compared with other 2-cycle solid-injection supercharged diesel engines of similar speeds and horsepower. Interchangeablity of various parts among models and a patented P&H cylinder head and liner assembly also are cited by the manu-The units have a bore of 4.5 in., a stroke of 5.5 in., and a displacefacturer. ment of 87.5 cu. in. per cylinder.

portedly employs only two gears and makes possible substantial weight savings over standard designs. The hoists are available in 16 standard models with 12 to 40-ton capacities.

SOLDERING TOOL-Ideal Industries, Inc., Sycamore, Ill., has announced a new fully portable lightduty "Thermo-Grip' soldering tool that operates on the resistance-heating principle, eliminating fire hazards and discolored work. Touching the work with the soldering tool completes the secondary power circuit and causes the part touched to heat almost instantly, it is said. A handy thumb switch permits close heat control and the unit is especially suited for use in inaccessible places and in-



Changing Screen Cloth Is Simple and Quick.—The upper end of the Vibro-King is readily removable, making it a much easier job to change screen cloth and saving a great deal of time.

Screen Clath Mounting.—At customer's option—acreen cloth may be mounted in rubber on steel acreen trays: or stretched over steel acreen supports protected by rubber—on any deck or decks

• Simpler in design and more efficient, with lower upkeep-the Telsmith Vibro-King has only two bearings instead of the usual four. The vibrating unit is mounted on these two heavy-duty roller bearings. The Telsmith-patented automatic counterweights assure smooth starting and stopping as well as exceptionally smooth operation. The circular screening movement is uniform everywhere on the screen cloth, and is constant under any load. Entire vibrating mechanism, including vibrating unit and screen cloth, floats on nests of springs. Adjustment to the right screening angle is quick and easy. It's a really rugged screen, too. The welded and reinforced main frame is horizontal-for rigidity, and easier installation. Cable suspension if desired. Made in several sizes with 1, 2 or 3 decks. Get Bulletin V-66.



Telsmith Vibro-King screen being used by WILCOX COAL CO. in their plant at Beckley, W. Va.

SMITH ENGINEERING WORKS, 516 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

51 East 42nd St. 211 W. V New York 17, N. Y. Chica Brandeis M. & S. Co., Inc. Louisville 8, Ky.

211 W. Wacker Drive Chicago 6, Ill. Inc. Ris

ker Drive 713 Commercial Trust Bidg.
6, III. Philiadelphia 2, Pa. Cambridge 4
Rish Equipment Co.
Charleston 22, & Glarksburg, W. Vs. Roncke 7,

238 Main Street 7016 E. Cambridge 42, Mass. Clevela Rish Equipment Co. Rosnoke 7, & Richmond 10, Va.

7016 Euclid Ave. Cleveland 3, Ohio Co.

o. 920 E. McMillan St. io Cincinnati 6, Ohio Tractor & Eqpt. Co., Inc. Birmingham 1, Aia.

ABC Brattice Cloth WINS THE FLAME TEST!

SHOWN here are the results of a recent laboratory combustion test comparing: (1) ABC Regular Treatment Brattice Cloth; (2) ABC Dry Treatment Brattice Cloth; (3) A competitive dry treatment Brattice; and (4) A plastic Brattice material. Each was subjected to a blow torch flame for 30 seconds under identical conditions. The photograph was taken at the end of the 30 second period.

#1 ABC	#2 ABC	=1	24
		charred at point of contact with flame only.	
No afterglow.	No afterglow.	20 second afterglow; first test. 36 seconds; second test.	

Send for sample of ABC Brattice and make this flame test yourself. ABC is flameproof . . . and completely resists mildew, won't shrink, resists face shots and other external damage. Write for Bulletin 49.

BRATTICE CLOTH CORP.

200 Buffalo St.

Warsaw, Indiana



There appeared in COAL AGE, in 1948, 785 more pages of advertising than in any other magazine serving the coal mining industry.

A McGRAW-HILL PUBLICATION - 330 W. 42nd ST., NEW YORK 18, N. Y.

flammable surroundings. It has two soldering heats, 5.3 and 4.2 volts.



MAGNETIC PULLEY-Homer Mfg. Co., Inc., Lima, Ohio, has announced its new "Power-Plus" non-electric permanent magnetic pulley, designed to be used as either head end pulleys or as idler pulleys in belt-conveyor systems and available in 57 standard sizes, in diameters of 12, 15, 18, 20, 24 and 30 in., for belt widths ranging from 4 to 60 in. According to the manufacturer, the head plates of cast aluminum are to eliminate piling up of magnetic material on the outer edges of the pulley. Homer Power-Plus magnetic separators reportedly are permanent, require no outside power source, are not affected by atmospheric or temperature changes and can be used in either indoor or outdoor applications. They are guaranteed by the manufacturer to equal or exceed strength and performance of electro pulleys of the same size and capacity.

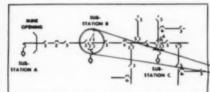


PUMPS → Peerless Type A pumps featuring a capacity range up to 60,-000 g.p.m. against heads up to 300 ft. comprise an augmented line of horizontal centrifugal pumps for generalpurpose pumping of water and alkaline fluids at temperatures up to 300 deg. F., according to the Peerless Pump Division, Food Machinery & Chemical Corp., Indianapolis 8, Ind. The single-stage double-suction splitcase units are available in sizes from 154 through 48 in. and all types of drives may be employed. Type A pumps are regularly furnished in cast iron but may be obtained in steel, bronze or other alloys. Bulletin B-1300 is available from Peerless.

SAFETY GOGGLE—A new cup-type goggle featuring newly developed molded thermoplastic cups, which are said to give strength and durability of

SECTIONALIZE HIGHER PRODUCTION

One of the surest ways to raise mine production levels is to cut down on time and work lost because of electrical disturbances. I-T-E presents these recommendations to show you how proper applications of I-T-E Sectionalizing Switchgear can pay off for your mine by holding electrical disturbances to an absolute minimum, and by assuring greater safety for personnel and equipment.



THE RECOMMENDED D-C SECTIONALIZING PRACTICES:

Kav

- 1 in each of the following cases, sufficient feeder and return circuit capacity should be provided so that the overcurrent protective device will be opened by a dead short-circuit at the most remote point of the circuit.
- 2 An overcurrent protective device should be installed between each two substations of such a point in the circuit that the resistance between each station and the device is approximately the same.
- 3 A disconnect switch or protective device should be placed at not more than 1,500 ft. Intervals in every power line.
- 4 An overcurrent protective device should be used in each circuit leaving a substation. If automatic reclosing circuit breakers are employed for this, tripfree operating mechanism should be used.
- 5 An overcurrent protective device should be placed at each main-branch circuit.
- 6 Each mining setup should be protected by an overcurrent protective device. In some cases, it may be necessary to protect two setups by one device.



4 An overcurrent protective device should be used in each circuit leaving a substation...1

♠ Minimizing electrical disturbances by confining them only
to the affected circuits is one of the prime advantages of a
properly sectionalized distribution system. By utilizing
I.T.E Type KSC Automatic Reclosing Circuit Breakers for
the duty above — that of protecting circuits leaving substations — you can safely, effectively confine faults to the
line on which they occur.

The KSC operates on circuits which can be fed in either direction; opens quickly at first sign of short or overload—recloses automatically on a return to normal line conditions. And the KSC mechanism is electrically trip-free—it cannot be held closed against a fault. For complete information on the I-T-E Type KSC—the only circuit breaker developed apecifically for the mining industry—write for Bulletin 4611.

Find out how you can benefit from proper applications of 1-T-E Sectionalizing Switchgear in your mine — consult the 1-T-E Mining Specialist in your locality. He thoroughly understands the Bureau of Mines' new recommendations for installing and using electrical equipment in coal mines, and is fully qualified to assist and advise you in planning the sectionalization of your distribution system. Use his services without obligation.

Be Production-Wise . . .

S-E-C-T-I-O-N-A-L-I-Z-I-N-G

SWITCHGEAR

I-T-E CIRCUIT BREAKER CO., 19TH & HAMILTON STREETS, PHILADELPHIA 30, PA.
31 OFFICES IN THE UNITED STATES - In Canada, EASTERN POWER DEVICES, LTD., TORONTO

SWITCHGEAR - UNIT SUBSTATIONS - AUTOMATIC RECLOSING CIRCUIT BREAKERS



MINE DEWATERING SPECIALISTS

A. D. COOK, INCORPORATED LAWRENCEBURG, INDIANA





The editorial and advertising superiority of COAL AGE is testified to by the 154 exclusive advertisers whose messages appeared in its pages in 1948.

A McGRAW-HILL PUBLICATION - 330 W. 42nd ST., NEW YORK 18, N. Y.



commonly used substances, with 30- to 40-percent lighter weight, has been announced by the Chicago Eye Shield Co., 2300 Warren Blvd., Chicago 12. Cups are engineered to fit both left and right eye areas snugly yet gently and have broad contact surfaces which eliminate pressure spots, according to the manufacturer. Another feature of this newly designed Cesco goggle, available in various styles, is the molded rubber Comfort-King headband, said to provide added comfort to wearers.



COMPRESSOR-A new direct-connected engine-driven two-stage gas or air compressor has been an-nounced by White-Roth Machine Corp., Lorain, Ohio, as the Lorain 0-10TS compressor. Model signed to compress large volumes of gas or air, the unit consists of a low-stage and a high-stage compressor cylinder driven through a crosshead by a Loraine Model 0 multifuel The unit is available comengine. plete with Bosch fuel pump for operation on diesel oil, or with Ensign carburetor and Bosch magneto for operation on natural gas or butane. Engine conversion can be accomplished on the job in approximately 90 minutes, the company states.

ARMATURE TESTER—A fast, dependable and simple method of testing armatures now is possible with its new portable electronic bar-to-bar armature tester, according to the National Electric Coil Co., 794 Chambers Rd., Columbus 16, Ohio. The lightweight test-prod unit reportedly can be adjusted for various commutator diameters and bar spacings and a cathode ray or magic-eye indicator mounted on the test prod facilitates rapid testing. The unit weighs 23 lb. and operates on 110 volts, 60 cycles a.c.

LOCKERS—Lyon Metal Products, Inc., Aurora, Ill., has announced a new line of steel-wood lockers. Framework and doors are steel, with all other parts steel-reinforced Masonite. Steel parts are finished in green enamel and the Masonite in



.... for dependable, economical power above ground!

Fan-cooled Reliance Precision-Built Motors are found on more and more dirty jobs above ground. Here's a trend that means operators everywhere are realizing in these rugged, long-lived motors the same dependability and economy which have made Reliance Motors the Number One choice for the toughest jobs underground.

In the operation of equipment such as apron feeders, weigh pan gates, shaking and vibrating screens, washers, pumps, air tables, crushers and conveyors...Reliance Precision-Built Motors can offer you real help in keeping production up, costs down. Write for Bulletins on Precision-Built Motors for use above ground.

VISIT us at the COAL SHOW in Cleveland, BOOTHS 1326-1328

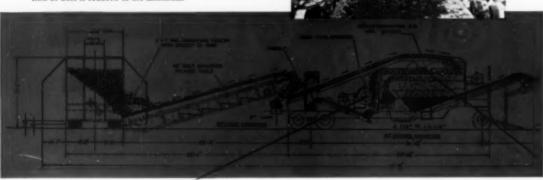
Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND

"Alloror-Drive is More Than Fourtr" . 1111 Immire fined, Cureland III. Olde



This completely balanced preparation plant includes a portable crushing and screening unit with a heavy-duty coal crusher and horizontal vibrating screen; 48" or 60" wide rubber belt picking table; 10 ton, 10' x 12' steel charging hopper, with ramp retaining walls and truck ramp over the top if desired. Capacities range from 75 to 100 tons per hour of stoker coal and carbon, the top size passing a 1" screen. A screen analysis of coal crushed shows approximately 15 to 25% passing the ½" square opening, when the crusher is set to produce 1" stoker coal, running from 5 to 10% oversize ... a considerably lower percentage of minus ½" coal than is produced by most other types of coal crushers. Production of dust is reduced to the minimum.





Cedarapids Heavy
Duty Coal Crusher,
designed specifically
for coal crushing,
produces desired
sizes without an excess of dust. Built he
withstand hard
urage and shock of
tramp iron, this coal
crusher gives extra
insurance against
costly shutdowns
for repairs.

HERE'S HOW IT WORKS . . .

Mine-run coal is dumped into charging hopper and fed onto conveyor belt which also serves as picking table. Grizzly plate feeder in the hopper allows fine material to drop onto picking belt first, so that larger sizes can be fed in a smooth, workable flow on top of them for easy picking. Picking belt carries coal to grizzly on the crushing and screening unit where lump coal falls off onto lump conveyor. The remaining coal drops onto double-deck, horizontal vibrating screen. Minus ¼" carbon falls through both decks and is taken out by slack conveyor. Stoker sizes fall through top deck to second deck, which feeds the coal to stoker conveyor. All coal retained on the top deck is fed to coal crusher where it is reduced and conveyed by return wheel to the plant conveyor and screen for final sizing.

.... for the first time A SMALL MINES COAL TIPPLE "All-In-One-Package"!

HERE'S a brand new development in coal preparation plants . . . standard Cedarapids units combined in a complete packaged coal tipple, designed to put the small mine in the big-time profit bracket. It's a LOW COST plant that cuts you in on today's premium prices for prepared coal.

This engineered package crushes and grades three or more sizes of coal in one smooth operation. It is extremely flexible as to feeding, picking and delivery into bins, storage pits or gondolas. You can feed it with truck, conveyor or any method most convenient . . . set it up on skids and later convert it into a complete portable unit on tires. Suitable washing equipment can be added where necessary.

While electrical operation is preferred by some users, any type of power can be used. Maintenance

costs are low and the few wearing parts can be quickly and easily replaced. Cedarapids, long experienced in producing highly efficient crushers and screens for coal and construction industries, maintains a nation-wide service organization, established for more than twenty years, to provide a ready source of supply for parts and "at-your-elbow" service.

Don't try to sell mine-run coal at a sacrifice when you can easily supply buyers with a gradation of coal superior to most on the market. Your investment in this type of machinery per ton of finished coal is extremely low, making it possible to work mines that may now be considered unprofitable. Get your share of the profits NOW! Write for full details, specifications and prices.





• PERMANENT • ECONOMICAL • EASILY ERECTED FIRE AND WEATHER RESISTANT

THE MESKER ALL-STEEL PREFABRICATED UTILITY BUILDING



GARAGE AND SHOP BUILDINGS, SAHARA COAL COMPANY, HARRISBURG, ILLINOIS

A "MUST" IN THE COAL INDUSTRY

Where strength, economy and versatility are essential

Designed according to A. I. S. C. specifications, the Mesker prefabricated, sectional steel buildings are proving invaluable in present day coal mine operations. There are no maintenance costs!

Check these features against your own building requirements—Mesker All-Steel Prefabricated Utility Buildings are manufactured with:

- (a) Structural steel frames, of ROLLED structural sections, to standard specifications.
- (b) Heavy 24-ga. galvanized sheet material covering.

"Unit" construction simplifies the addition or removal of sections, Every piece and section is shop prefabricated.

At an amazingly small cost, and in a very short time, the Mesker sectional buildings may be moved from one location to another without the loss of a single bolt.

Mesker has the world's greatest line of prefabricated sectional steel buildings and steel construction materials.



WRITE, TODAY, FOR CATALOG "C"



its natural brown color. The units have the company's recessed-handle feature and are made both single-and double-tier in all of its standard sizes. Accessories include steel sloping tops and closed bases. The lockers are available without legs where recessing is desired.

SHAKE - OUT VIBRATORS - Designed by the Cleveland Vibrator Co., 2718 Clinton Ave., Cleveland 13, Ohio, f.r installation on almost every type of hopper and storage bin, Type F Cleveland pneumatically-operated vibrators are said to deliver hammerlike blows that prevent the archingover and plugging of coal and other materials in bins of capacities up to several hundred tons. They reportedly serve to assure constant and rapid flow of materials and are suitable for either intermittent or continuous duty. Type "F" vibrators are available from stock in six sizes, with piston diameters from 14 to 4 in., over-all widths from 3 to 74 in. and over-all lengths from 6 to 15 in.

DIESEL-OIL ADDITIVE—Pennsylvania Refining Co., Cleveland 4, Ohio, has announced Penn Drake "Diesel" Gumout, a new additive for diesel fuel and heating oils that when used in diesel engines is said to dissolve gum and sludge, thus cleaning the fuel lines and injection system. Diesel Gumout also is designed for use in home, industrial and range oil burners (all types of oil-heating equipment) to assure cleaner, more economical burning of the fuel.



PAVING BREAKER — Homelite Corp., Port Chester, N. Y., has announced an entirely new type of paving breaker that is powered by elec-



NEWLY DESIGNED ... PERFORMANCE Proved CUTTING CHAIN ··· AND BIT ..

Visit us at COAL SHO MAY 9th TO 12th Booth 308

RISING COSTS... FIGHT



RIGID ...

DROP FORGED

OUICK ...

··· COMPACT ···

STRAPLESS CHAIN

··· EASY ···

REPLACEABLE PARTS...

MACHINED INTERLOCKS-HARDENED PINS AND BUSHINGS

COMPANY, INC.

E HAUTE



inghouse and Joy equipment. Promet bar stock. Round, hexagon, square, Rough cast, semi-finished. Cored stock all sizes (by 1/8" steps) from 1/2" minimum core to 12" O.D. and 13" lengths. Six grades of hardness. Promet lead or tin base babbitt.

WRITE FOR FREE POLDERS

THE AMERICAN CRUCIBLE PRODUCTS CO. Lorein, Ohio, U. S. A.

1307 Oberlin Ave.

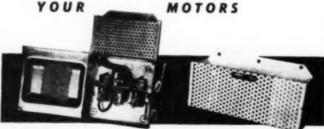
Prompt deliveries can usually be made from stocks maintained at

BECKLEY, W. V.A., The Universal Supply Company, 1207 S. Kanawha St., Phone 7307 KERMIT, W. V.A., Controller Block & Supply Company, Phone 301 LORAIN, OHIO, The American Crucible Products of Phone 6083

Other Representatives
423 Blair Representatives
423 Blair Representatives
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SMOOTH STARTS with GUYAN ----

D. C. STARTERS MEANS LONGER TROUBLE-FREE SERVICE FROM



GUYAN TYPE MMS MOTOR STARTER Manually operated - automatically makes armature-to-line connection at proper speed to insure smooth starts after power disruptions. Solderiess lug connections.

GUYAN TYPE CMS MOTOR STARTER Limits initial inrush of current—permits smooth starts—prevents arcing. Requires no operator. Similar to type MMS except for omission of manually operated starting

LOGAN. GUYAN MACHINERY CO.

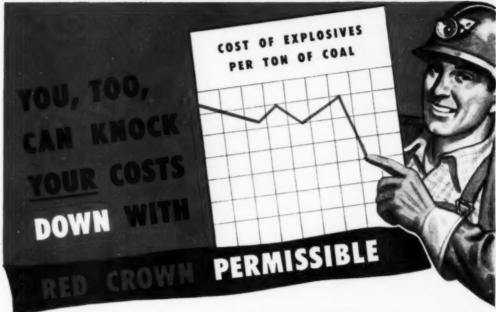
tricity and hits a harder blow than the largest pneumatic breaker, according to the company. Electricity to operate the 84-lb. high-cycle breaker is supplied by a 129-lb. dual-voltage gasoline-engine-driven generator, which can be used for operating other types of high-cycle tools as well as standard 110-volt tools and floodlights. Both breaker and generator reportedly make a compact combination that can fit in the trunk of a car and can be quickly put into operation by one



TRUCK TIRE-New heavy-duty offthe-road tire announced by Cooper Tire & Rubber Co., Findlay, Ohio, known as the Lugger Traction Tread, is presently available in sizes 8.25-20, 9.00-20 and 10.00-20, in 12- and 14ply ratings. According to the manufacturer, features include a tire body having extra strength under the tread. plus extra reinforcement at the shoulders and sides to uniformly distribute and absorb impact and shock, and adaptability to most off-the-road and on-the-road services.

DIESEL ENGINE-A new supercharged Model HRBIS-600 diesel engine for industrial applications has been announced by Cummins Engine Co., Inc., Columbus, Ind. Developing 225 hp. at 1,800 r.p.m., the new model has a 51/a-in, bore, a 6-in, stroke, with piston displacement of 743 cu. in. It employs the four-stroke cycle principle of operation and the Cummins fuel distribution and injection system. An automotive engine, Model HRBS-600, also is available.

WELDING AND HARD-FACING-Air Reduction Sales Co., 60 East 42nd St., New York 17: New line of hardfacing alloys is divided into three primary groups, ferrous alloys, cobaltbase alloys and tungsten carbide. To introduce the new line, the manufacturer has made available a special trial assortment that includes one alloy especially recommended for equipment subjected to severe abrasion and medium impact (oxyacetylene and electric arc) and one for equipment



MPORTANT ADVANTAGES

- 1. Red Crown is easy on the roof.
- Slow heaving and spreading action with results similar to those obtained with the use of black powder.
- 3. Power distributed evenly throughout the face of the cut.
- 4. Coal displaced in firm, hard lumps means less degradation.
- Red Crown, containing no nitroglycerine, is the non-headache permissible.
- Less smoke and fumes means less down-time for expensive equipment.

You'll get more coul at less cost per ton with Red Crown—the slow speed, Class A Permissible that only King Powder Company can make. Red Crown is surface-sensitized. It gives remarkable spread. It shears the ribs clean and results in preparation that is very nearly equal to that obtained with black powder.

You'll get improved quality. In either firm or friable structure, Red Crown does not severely shatter the coal in the vicinity of the hole. As a result, you get more lump and less slack—less degradation in transit because pin cracks are reduced—and good, firm lumps of coal delivered to the consumer.

Prove these results by having Red Crown demonstrated in your mine. We shall be glad to arrange a Red Crown demonstration at your convenience. Just say the word to your King representative or phone or write us direct.

Why not start arrangements today?

THE KING POWDER COMPANY, INC., CINCINNATI 1, OHIO

1878...Our 71st Year...1949

RED



CROWN

THE PATENTED, SURFACE-SENSITIZED PERMISSIBLE





VIBRATING SCREEN—Syntron Co., 975 Lexington, Homer City, Pa., has announced a new line of vibrating screens designed for economical and efficient rough sizing. The units are made up with stepped, punched plates having tapered elongated openings and are available with single or multiple-deck screen plates. Powered by the Syntron "Vibra-Flow" vibrating motor featuring variable control of material flow, the unit is said to provide a two-purpose unit—a vibrating screen and a rheostat-controlled vibratory feeder.

subjected to severe impact and abrasion (electric arc).

Victor Equipment Co., 844 Folsom

St., San Francisco 7: Four new fluxes—No. 3 for brazing brass and bronze, steel, clean cast and malleable iron; No. 5 for moderate heatbrazing of cast and malleable iron and tinning dirty castings; No. 7 for high-heat brazing of cast and malleable iron where base metal becomes exceptionally hot; No. 9 for fast effective welding of cast iron.

Lincoln Electric Co., Cleveland 1, Ohio: "Surfaceweld A," an improved hard-surfacing powder applied with a carbon electrode, designed to deposit a thin chromium-carbide-type surface that is highly resistant to abrasive wear and corrosion.

Eutectic Welding Alloys Corp., 40 Worth St., New York 13: EutecTrode 24/29 developed to produce strong bonds and high-tensile welds thoroughly machinable through the weld and the weld zone on both gray and alloy cast iron, without preheating.

BAKING VARNISHES - Two new clear baking varnishes have been announced by John C. Dolph Co., Dept. 39, 1060 Broad St., Newark 2, N. J. Synthite BC-301 is composed of phenol formaldehyde resin and selected drying oils and was formulated for applications where excellent heat resistance and exceptional bonding is required. It is recommended by the manufacturer as a transformer and coil varnish and can be used on all types of modern coated magnet wire. Synthite BC-302 is a blend of synthetic gums and drying oils especially formulated for an extremely rapid cure. The cured film possesses excel-



Yes, for men who mine the modern way the Trolleyphone is the last word. More coal comes out, less cost goes in, when you can talk anytime to your motor operators on the move—or your foremen at the face. Instant two way talk on FM carrier-current gives you supervision anywhere—anytime—for better coal control.

Mine with Trolleyphone supervision to:

- · Produce more coel
- o at less cost
- · with greater safety
- for greater profits

FARMERS ENGINEERING

TROLLEYPHONE
"It Speaks For Itself"

POWDER COMPANY POWDER MFG. CO. Salt Lake City, Missouri DIAMOND SUPPLY Specialized Field Warehousing for Quick Delivery Conveniently located to give your drilling needs prompt attention, they offer highest quality tools ... These distributors are ready to serve you quickly and dependably through their strategically located warehouses with the complete line of Coalhighest quality service. master Drilling Tools. DOOLET BROTHERS SALEM TOOL Salem, Ohio Horvey, Winois peoria, Minois COMPANY THE BUDA



"GENERAL PATTON"
TANK



Dropped, alammed and battered on the job, blocks and sheaves have to be tough! Armored Construction makes American Heavy Duty Utility Snatch Blocks serve better, last longer. Rigged quickly, too . . . just lift the hook and lay in the rope. In three sheave sizes, ten-ton capacity, handling up to 1s' wire rope. Sold by distributors everywhere. Made by American Hoist and Derrick Co., St. Paul 1, Minn.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND AND GENUINE CROSBY CLIPS

ASK FOR
AMERICAN
BLOCKS AND
SHEAVES

0102



Here's a Nagle Pump that has been handling coal fines for two years—handling highout breakdown or down time for repairs.
It's a Nagle 6", Type "T" pump specifically designed to give maximum efficiency
and service handling a heavily laden abusive mixture.

This same outstanding service obtained by the Sherwood Templeton Coal Co., Linton, Indiana, is available to you with Nagle Pumps for every abusive pumping application. Six types in many sizes and with many modifications to meet every noed. Send for Bulletin 4711 which describes design features.

Nagle Purryss

1235 N. CENTER AVENUE. CHICAGO HEIGHTS. ILL. lent dielectric properties, plus a high degree of resistance to water, oil and chemicals, the company reports. Its high bonding strength is said to make it particularly adaptable to such applications as armatures, stators, transformer coils, motor fields and fluorescent ballasts, as well as all types of coated magnet wire.

TRUCK TIRES-Off-the-road tires made with Nylon cord throughout, and including the Nylon shock shield, have been announced by The B. F. Goodrich Co., Akron, Ohio. Advantages cited by the company include: greatly increased tire-body strength, since the Nylon cord is twice as strong as the rayon previously used and will withstand more than double the impact without rupturing; weftless construction in which there are no cross threads to increase friction; and the fact that users will be able to have a larger percentage of tires recapped. Tires in which the new construction is utilized are: 11.00-20 and 11.00-24 in 14-ply rating; 12.00-24 in 16-ply rating; 14.00-24, 16.00-24, 18.00-24 and 21.00-24 in 20-ply rating; and 16.00-24. 18.00-24 and 21.00-24 in 24-ply rating.

MIMEOGRAPH DRAWING-A complete new line of mimeograph drawing instruments, manufactured by the molded plastic process and including lettering guides, styli and screen plates, has been announced by A. B. Dick Co., 720 West Jackson Blvd., Chicago 6. Among the features of the line cited by the manufacturer are the more uniform and smoother character openings, absolute maintenance of dimensions, quality, uniformity and color fastness obtained with the lettering guides; several new types of styli; and a new large size of screen plate that eliminates the need for moving the plate when large areas are to be shaded.

DUST RESPIRATOR—A new S-600 dust respirator, approved by the U. S. Bureau of Mines for Type A dusts, has been announced by Pulmosan Safety Equipment Corp., 644 Pacific St., Brooklyn 17, N. Y. Features of the unit, according to the manufacturer, includes a 3-in.-diameter silica dust filter; new, compact exhalation valve; improved-vision aluminum body easily adjustable to fit any facial contour; black alumilited parts for resistance to corrosion and light reflection; double nylon elastic headbands that resist acids, alkalies and perspiration; and a patented rubber face cushion for comfortable fit.

PORTABLE PIPE AND BOLT THREADER—Beaver Pipe Tools, Inc., 1001 Danna Ave., Warren, Ohio, has announced its Model B portable power tool for threading ½- to 2-in. pipe and ¼- to 1½-in. bolts and, with drive shaft and geared tools, up to 8-in. pipe. The unit operates with a universal a.c. or d.c. motor of 110 or

How to make a "Gold Digger" pay off



In this application, the "gold digger" is a dragline, powered by a General Motors Diesel engine, dredging along the Clearwater River in Idaho.

In any application . . . in draglines, shovels, trucks, crushers, pumps, fans and all other types of mining equipment . . . GM Diesel engines pay off because they get more work done at less cost.

GM Diesels are 2-cycle-give power at every

downstroke and are designed to get all the possible work out of every drop of fuel. They are unusually smooth—easy to start—rugged and compact.

No wonder so many mining operators rely on this modern Diesel power to keep production up and costs down. You, too, will find it pays to specify GM Diesels for repowering old equipment or when buying new. Get all the facts from your nearest GM Diesel distributor or your favorite equipment company.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES. Up to 200 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS. Up to 800 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

NEW BELT CONVEYOR

cuts haulage cost 50¢ per ton with 25% lower investment

Saves 6000 feet of Coal Travel

In 1931 operations in a once thriving mine came to a standstill because of high costs.

A few years ago increasing demand for coal brought the management of the mine

A few years ago increasing demand for coal brought the management of the mine to the conclusion that it could be opened and operated economically if a new plan for conveying the coal could be put into execution.

A three-way engineering team went into action-operating engineers, consulting and equipment engineers, and conveyor belt engineers from U. S. Rubber.

Their bold plan called for the longest single unit coal slope belt conveyor in the world-2600 feet long, 15 degree incline, 643 foot lift.

Just at this time U. S. Rubber completed development of an amazing new conveyor belt combining super-strong Ustex* and flexible nylon. This timely development made it practical to handle the entire conveying job from underground loading points to the surface with a single Ustex-Nylon belt. This, together with a ½-mile surface belt conveyor provided a practical short-cut

For now the mine is operating. Coal is moving up the slope, across the surface on an efficient belt conveyor system—modern, streamlined, economical—another achievement of Three-Way Engineering.

to economy and success.

SUMMARY OF SAVINGS New Belt Conveyor System

ELIMINATES: One vertical shaft

One underground slope
One underground plane
Six transportation units (rail, hoist)

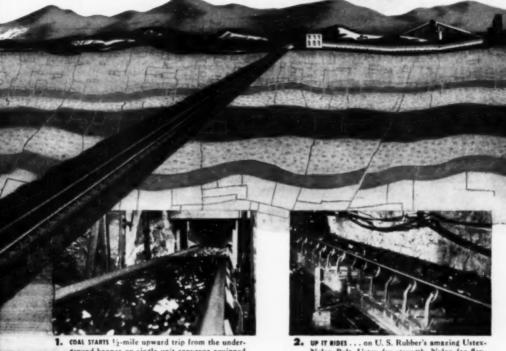
Topping spillage on rail system
PREVENTS: Transportation occidents

REDUCES: Lost man-hours. Insurance rates
INCREASES: Tons per hour; tons per man

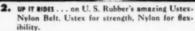
25% from investment
 50¢ per ton from haulage costs
 6000 feet from coal travel

SYSTEM.

World's Langest Single-Unit Coal Slope Belt Conveyor—equipped with more than a mile of U.S. Rubber USTEX-NYLON BELT—delivers coal in continuous stream to a 1/4-mile surface conveyor also equipped with a U.S. Rubber Belt.

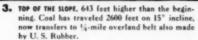


ground hopper on single unit conveyor equipped with one mile of Ustex-Nylon belt.





4. HERE IT IS at the end of the 3900 foot short-cut that saves 6000 feet of travel.



When you have a materials handling problem-underground, slope, or surface, call in a U. S. Rubber engineer. Write Mechanical Goods Division, United States Rubber Company, Rockefeller Center, New York 20, New York.

*Registered trade name of U. S. Rubber



A DEVELOPMENT OF UNITED STATES RUBBER COMPANY



Sales and Service on these GENERAL LINE MINE SUPPLIES

Acher Core Drills Cable Austin Powder Co. Atlas Lathes & Drill Presses American Brattice Cloth American Crayon Co. Bearings-All Types Coalmaster Drilling Equipment

Chicago Pneumatic Tools Marlow Pumps American Steel & Wire Cincinnati Electric Tools McCarthy Overburden General Electric Line Glidden Paint Company Grey Rock Brake Lining Lincoln Lubrication

Equipment Lincoln Welding Equipment

Horizontal & Vertical Deille National Batteries Page Drag Line Buckets Plomb Tools Pyrene Fire Equipment Sheppard Diesels United States Rubber & Belting

DIAMOND SUPPLY COMPANY, INC. EVANSVILLE, INDIANA MADISONVILLE, KENTUCKY

Users Find that lety Pull

-MULTIPLY MANPOWER Extremely easy to operate, they help workmen do more work, faster, easier. Ruggedly built to handle wider range of jobs.

-COST LESS TO USE Moderately priced, Coffing Ratchet-Lever Hoists have many parts of drop-forged, heattreated alloy steel, other long-life features to hold down replacement and maintenance costs.

-HELP RAISE SAFETY STANDARDS Coffing safety features include dual ratchet and pawl assembly that cannot slip or drop load; "Safety-Load" handle to avoid dangerous overloading.

information on nine models of the Safety-Pull hoist-34 to 15 tons capacity. See how they can help your workmen do more jobs-faster, easier, safer.



AMAZING HOIST-JACK IS A HOIST-

A JACK - A PULLER

-3 useful tools in 1. Built in two sizes. 2000 lb. and 4000 lb. to handle scores of jobs. Send for Bul. G5HJ.



WRITE FOR BULLETIN GSSP, giving full

220 volts, 25 to 60 cycles. Features. according to the manufacturer, include an automatic switch lock and chuck wrench holder, plus an eccentric spool pipe-steady said to absorb the "whip" of long lengths of revolving pipe and eliminate practically all spindle wear, thus insuring better threads.

Industrial Notes

Fuller Mfg. Co., Kalamazoo, Mich., has announced three appointments in the sales department of its transmission division. J. A. Packard, has been named manager, original equipment sales; L. C. Butler, manager, service sales; and B. S. Tooker, service manager. Mr. Packard joined Fuller in 1942 as sales engineer. Mr. Butler joined the service department of Fuller in 1934 and has served as assistant service manager and as service manager. Formerly in charge of the service repair department, Mr. Tooker has been associated with Fuller since 1942.

Goodyear Tire & Rubber Co., Akron, Ohio, has announced a complete reorganization of field supervision of its mechanical goods sales division and the establishment of four sales divisions. The new eastern sales division will be in charge of O. A. Schilling. The central sales division will be under the supervision of H. E. Langdon. R. B. Warren will take over the southern sales division and R. G. Abbott, who will continue to operate in the capacity of district manager in Los Angeles, will head-up the western sales division. Mr. Schilling, manager of the former eastern sales division since 1947, joined Goodyear in 1939, Mr. Langdon has been associated with Goodyear for the last 29 years and was made western division manager in 1931. Mr. Warren, who heads the new southern sales division, joined Goodyear in 1927 and formerly was manager of the Pittsburgh district. Mr. Abbott, district manager at Los Angeles since 1947, joined Goodyear in 1926. M. W. Sledge has been appointed assistant manager of Goodyear's belting sales department, replacing the late W. P. Hallstein, Mr. Sledge joined Goodyear in 1935 and most recently has served as a mechanical goods field representative in Knoxville, Tenn.

American Hoist & Derrick Co., St. Paul, Minn., has elected Stanley M. Hunter to the newly-created position Mr. of executive vice president. Hunter, who joined the sales depart-ment of American Hoist in 1936, has served as vice president of sales and a member of the board of directors since 1945.

Broderick & Bascom Rope Co., St. Louis, has announced that Fred Zimmerman, vice president, who has been

MIGHTY MIDGET" PULLERS: LOAD BINDERS

A New Era IN COAL PREPARATION



The rapid growth or mechanical mining, especially where it involves the extraction of the entire seam, has increased the need for mechanized preparation of coal produced for various markets.

The average seam of coal contains ash and sulphur impurities which are usually concentrated in bands or strata immediately adjacent to the portions of the seam containing the better quality coal.

ter quality coal.

Ash and sulphur impurities are often found so finely dispersed that they are not apparent to the untrained eye. Material containing such impurities may have a specific gravity very close to that of coal which is of satisfactory quality.

Before the advent of mechanized mining,

Before the advent of mechanized mining, banded coal in the seam was manually discarded at the working face in the mine as it could not be efficiently separated in the washery.

After the objectionable banded material was discarded at the working face, the coal could be recovered from a mixture of coal and slate or rock due to the wide difference in specific gravity between these materials. Jigs and launders could satisfactorily serve this purpose but could not efficiently separate second quality coal (which the banded material represents) from premium quality coal. With machine mining the full seam is loaded including the banded material which was formerly disearded manually.

terial which was formerly discarded manually. Separation of premium coal from second quality coal can only be accomplished at a lower level of specific gravity than has been found possible heretofore with devices employing only

currents of water.

In the laboratory heavy liquids are used to indicate the correct specific gravity of the bath for the separation of second quality coal from premium quality coal. The well known laboratory float and sink test is recognized as the most accurate method of separating solids by specific gravity differences. Materials of greater specific gravity will sink and those of less gravity will float.

Coal preparation engineers have long realized the possibilities of such a separation, provided it could be applied economically on a commercial basis. Methods have been discovered and placed into practical use, which will produce the same result on a commercial scale at unit capacities up to 250 tons per hour and at efficiencies upward of 98% with respect to laboratory procedure.

Coal producers can now combine the economies of mechanized mining with maximum recovery of salable coal out of run-of-mine material by the use of the Davis Heavy Media Float and Sink Processor which has been thoroughly tested by equipment installed and being installed at plants of some of the "world's largest producers of coal.

producers of coal. Send for catalog No. 148.



*At the new Jones & Laughlin Steel Corporation 2000 tons hourly capacity coal preparation plant at East Fredericktown, Pennsylvania, our Heavy Media Float Sink Processing equipment is being installed to clean 5' x 1' coal in combination with free discharge launders and concentrating tables for densing the 1' x 0 coal. All processing equipment engineering for the entire plant was by us in collaboration with the Jones & Laughlin engineering staff for the general contractors, F. H. McCiraw & Company of New York and Hartford, Comp.



Nelson L. Davis Company

TRAMPIRON PROBLEM?



Eliminate tramp iron from your operation the positive, dependable, economical way. Install a S T E A R N S MAGNETIC automatic spout separator—protect crushers and grinders, maintain continuous production and lower your operating costs.

Let STEARNS MAGNETIC show you how to solve your tramp iron problem. Write today for Bulletin 97D.



STEARNS MAGNETIC

MANUFACTURING

COMPANY

661 S. 28th St. Mi

Milweukee 4, Wis.

in charge of sales, has assumed the new title of director of sales. J. J Sieber has been appointed sales man ager. Mr. Zimmerman joined the Broderick & Bascom organization in 1911. Mr. Sieber, who joined the company in 1929, has most recently been chief product engineer.

Marion Metal Products Co., Marion, Ohio, has elected W. H. Hammond vice president in charge of sales. Associated with the automotive dumpbody and hydraulic-hoist industry since 1922. Mr. Hammond formerly was vice president in charge of sales of all divisions of Gar-Wood Industries, Inc., Detroit, Mich.

United States Rubber Co., New York, has announced major staff promotions in its mechanical goods, general products, Lastex yarn and rubber thread divisions. Walter F. Spoerl. general sales manager of the mechanical goods division, has been named general sales manager for the divisions. Robert D. Gartrell, development manager for the company's Passaic, N. J., plant, has been named development manager for the divi sions. Wesley A. Armstrong, factor manager of the company's Bristol R. I., plant, has been appointed production manager. Frederick S. Bart. lett, formerly assistant manager, has been named factory manager of the Bristol plant, succeeding Mr. Armstrong. James E. Power, since 1937 eastern sales manager for the mochanical goods division, has been named manager of national account-W. A. Tipton has been apsales. pointed manager of branch sales for the division. He is succeeded as New York district sales manager by O. S.

Cardox Corp., Chicago, has appointed F. B. Baca, former plant manager of the Hardsocg Division, Ottumwa, Iowa, chief engineer of the division. Mr. Baca will be responsible for all engineering on the company's new product-development program, with headquarters in Chicago. J. C. Tincher, formerly the Cardox local representative at the plant, succeeds Mr. Baca as plant manager at Ottumwa.

R. G. LeTourneau, Inc., Peoria, Ill., has appointed George C. Summers, active in a sales capacity for the company for many years, district sales representative for Kentucky, Michigan and Ohio, and for Ontario and Quebec, Canada, with headquarters at Columbus, Ohio.

General Tire & Rubber Co., Akron. Ohio, has promoted Charles L. Howes, central division manager for the past 10 years, to southwest division sales manager. With headquarters in Dallas, Mr. Howes will supervise sales operations in the territories now serviced by General's branch offices in Dallas, Memphis, Houston, St. Louis, and Kansas City.

Detroit Diesel Engine Division,

How Easy, Now, to Join and Repair Belts!



A hammer . . . block of soft wood . . Bristol's Belt Lacing. Hammer fastener through belt.



Using wood block as a back-up, flatten the projecting prangs.



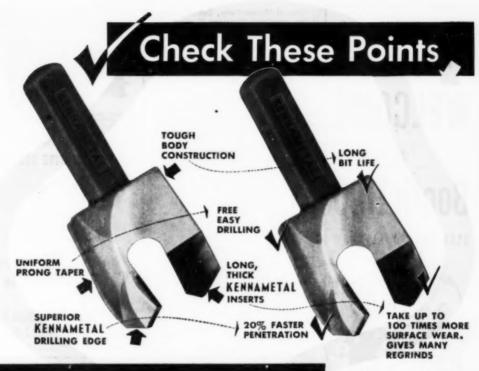
Perfect job! Ends securely joined . . . tears repaired!

Keep these fasteners handy for quick, strong, permanent repairs.

Order from your distributor
THE BRISTOL COMPANY

Mill Supply Division
139 Bristol Road, Waterbury 91, Conn.

BRISTOL'S
BELT LACING



for Outstanding Bit Performance

Visit Our Exhibit — Spaces A241, A242 and A340 at the 1949 Coal Convention and Exposition—May 9-12, Cleveland.

LONGER SERVICE

KENNAMETAL Auger Bits give you up to 100 times longer bit life. Their solid Kennametal cutting edges are far harder than the hardest tool steel—have 2.5 more resistance to deformation. Their longer service life means fewer costly drilling delays and gives you the very lowest bit cost per ton.

LOWER MAINTENANCE COST

EFNAMETAL Auger Bits drill easier because the cutting edge stays sharp up to 100 times longer and because prong design gives maximum freedom from binding. They permit holes to be drilled full depth without strain on men or motors. One typical example is in Harrison Co., W. Va. where \$2,688.00 was saved in one year on armature repair cost alone. Other big savings are made on bit sharpening, bit filing, and bit changing.

DRILL BOTH COAL AND ROCK

EFFNAMETAL Auger Bits provide more drilling flexibility—their toughness, hardness, and strength enable you to drill partings, veins, most inclusions—or to drill top and bottom rock. You always have extra drilling power to use when you need it.

Your drilling job can be done at a minimum cost with the greatest possible savings in labor. Mining Division, Kennametal Inc., Latrobe, Pa.

KENNAMETAL

AUGER BITS . ROCK BITS . MACHINE BITS . STRIP BITS

Gives Lower Bit Cost Requires Less Bit Changing Drills Coal and Rock Increases Rate of Penetration Lessens Work of Driller Gives Clean, Uniform Holes



KENNAMETAL Inc. Latrobe, Pa. Gentlemen:

BOOKLE

Please send me a free copy of Booklet on drilling and cutting.

NAME
POSITION
COMPANY
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You'll be WELCOME at Booth 1100

CLEVELAND COAL SHOW



- Renew old friendships

 make new ones
 among men who specialize
 in solving heavy-duty
 lubrication problems similar to yours.
- Learn why D-A Lubricants have reduced down time, parts bills, and lubrication costs on the toughest jobs.



D-A LUBRICANT COMPANY, INC.

General Motors Corp., Detroit, Mich., has appointed Raymond E. Danto as a market analyst on its sales staff. Mr. Danto was formerly associated with automotive research program for several large car manufacturers.

General Electric Co., Schenectady, N. Y., has appointed S. W. Corbin assistant manager of the industrial divisions of G.E.'s apparatus department. Mr. Corbin also will continue as manager of the resale industries division, a position he assumed in 1943.

Wagner Electric Corp., St. Louis, Mo., has purchased a plant consisting of industrial buildings containing 90,-000 sq. ft. located on an eight-acre tract at Mt. Vernon, Ill., and will concentrate its facilities for building transformer tanks at the new proper-The Mt. Vernon plant is the second Illinois property to be acquired Early in 1948, a plant by Wagner. located at Edwardsville was purchased and adapted to the manufacture of automotive air brakes and hydraulic industrial brakes. Altogether, by purchase and by additions to its main plant in St. Louis County, Wagner reportedly has increased its manufacturing capacity approximately 50 percent since the end of the war.

Standard Stoker Co., Inc., New York, has acquired exclusive manufacturing and sales rights to the Chicago Automatic Spreader Stoker for industrial and railway use in stationary boiler plants. The Chicago Automatic Stoker, to be manufactured at Standard's Stoker Division's plant at Erie, Pa., will be added to its line of locomotive stokers.

Cutler-Hammer. Inc., Milwaukee, Wis., has announced two new office moves to facilitate handling of expanded sales activities in the Columbus and Youngstown areas. The Columbus office, now located at 2700 East Main St., operates as a branch of the Cincinnati district office, under the direction of R. D. Yoder. Headed by E. J. Gove, the Youngstown office at 25 East Boardman St., is a branch of the company's New York district office.

Westinghouse Electric Corp., Pittsburgh, Pa., has appointed John Z. Linsenmeyer manager of mining, petroleum and chemical engineering. Mr. Linsenmeyer, who joined Westinghouse through its graduate student training course in 1937, succeeds Phelan McShane, who has been appointed consulting mining engineer for the company. Mr. Linsenmeyer served as an industry engineer in the general mill section and the mining, petroleum and chemical section until his recent appointment.

Eaton Mfg. Co. has arranged with the McKinnon Industries, Ltd., for the manufacture of Eaton two-speed axle units, in St. Catharines, Ontario, with Canadian materials and



Make your products more saleable at higher prices. Built in t to 5 decks, with screening areas 2 to 5

PRICED FROM \$39500

IMMEDIATE DELIVERY

Bonded Scale & Machine Co.

2195 S. Third St. — Columbus 7, Ohio Phone Garfield 2186 University 2832, Eves. Scales a Convuyors a Idlers Vibrating Screens Crushers Feeders



RED H* C RED H D RED H F BITUMINITE* D BITUMINITE F COAL POWDER 2

Slow permissibles for producing coarse coal

COLLIER* C RED H B

Fast permissibles for producing fine coal and for rock work in coal mines

HERCOGEL* A HERCOGEL 2 (semi-gelatin)

Gelatin permissibles for wet work and rock

The right permissible for the job...

From these ten Hercules

permissibles you can obtain the right explosive for any coal mining requirement. The descriptive booklet, "Hercules Explosives," will help you in selecting the one which most economically fits your particular needs.

HERCULES POWDER COMPANY 936 King St., Wilmington 99, Dec.



with C-E RAYMOND Flash Drying System



Read how this modern Raymond System is applied in the prepara-tion of fine coal sizes. Bulletin sent on request.

This modern plant in Western Pennsylvania is drying fine coal sizes economically with the C-E Raymond Flash Dry-

The equipment consists of three drying columns, connected to a single furnace. The coal comes from the centrifuges at an initial moisture content of 8%, and is dried to a final moisture of 2% . . . the finished coal size is $\frac{1}{4} \times 0$.

In this coal cleaning plant, the flow sheet includes screen type dryers and Flash Dryers. The C-E Raymond stokerfired air heater supplies the hot gases for both types of dryers. This is the second major installation for the same company. The performance of the first C-E Raymond Flash Drying System at another plant was so successful that it resulted in

> The C-E Raymond System is built in several different capacities, and is flexible in meeting any plant conditions. A single drying column has a range from 10 tons up to 75 tons per hour. Multiple columns are available for still higher capacities.



COMBUSTION ENGINEERING—SUPERHEATER, INC.
FLASH DRYER DIVISION 1315 North Branch St., Chicago 22, Illinois

1315 North Branch St., Chicago 22, Illinois



B Jubmersible Pump

The only basic improvement in deepwell turbine design . . . since Byron Jackson introduced the deepwell turbine pump in 1901.

SHAFTING LENGTH TROUBLES define the "borderline" beyond which the shafttype deepwell turbine pump cannot be used successfully. That "borderline" is determined by length of shaft alignment.

THE SUBMERSIBLE IS DIFFERENT. Consisting of close-coupled deepwell turbine pump and electric motor, it operates deep down in the well... entirely submerged in water at any depth. With no long shaft or shaft-bearings to align, it operates equally well 50 feet down or 1500 feet down. Many are operating at depths from 900 to 1000 feet with amazing efficiency and unvarying dependability. And all because a successful means of sealing an electric motor for underwater operation was developed.

Get this new Submersible Bulletin. Write Dept. 310. Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles 54, California.

Byron Jackson Co.

LOS ANGELES 54, CALIFORNIA

The

The many installations of these "C-M-I" dryers in coal washing plants from Pennsylvania to Washington and Illinois to Alabama have proved that all sizes below 3/s inch are delivered from "C-M-I"s with less surface moisture than can be obtained from any other type of mechanical dryer or dewaterer.

And at a cost of only a few cents per ton.



Let us tell you where these machines are in operation so that you may contact the operators and obtain from them full data on an operation similar to your own.

CENTRIFUGAL AND MECHANICAL INDUSTRIES 3600 SOUTH SECOND STREET ST. LOUIS IS, MO.

labor. General Motors Co., International Harvester Co. and Ford Motor Co. will offer Eaton two-speed axles fabricated in Canada on various model trucks.

National Mine Service Co. has pur-chased the assets and business of Whiteman & Co., distributors of mine supplies and equipment, with offices and warehouse in Indiana and Altoona, Pa. The newly acquired com-Division of National Mine Service Co. and will operate under direction of L. W. Householder, vice president. The personnel, organization and policies will be unchanged. With the addition of Whiteman, National Mine Service now operates six divisions.

Rome Cable Corp., Rome, N. Y., has appointed F. S. Marks sales promotion manager. Mr. Marks previously served for a number of years as district sales manager in the company's Atlanta office. C. R. Stegin has succeeded Mr. Marks as sales representative, serving the states of Florida, Georgia and South Carolina.

Carnegie-Illinois Steel Corp., Chicago, has named James M. Darbaker general manager of sales. Mr. Darbaker, formerly Chicago district manager of operations, has been succeeded by Stephen M. Jenks, previously general superintendent of the Gary Works. Mr. Darbaker, who first worked for the corporation from 1913 to 1920 during summer vacations, was made assistant manager of operations for the Chicago district in 1943 and manager in 1947.

Pettibone Mulliken Corp., Chicago, has appointed Paul E. Lundquist sales manager of the newly formed con-Mr. struction-equipment division. Lundquist was formerly vice president, Republic Drill & Tool Co.

W. A. Jones Foundry & Machine Co., Chicago, has named Joseph A. Marland, with the company since 1926 and formerly in charge of sales in the Chicago territory, sales manager, Thomas A. Jones, formerly personnel manager and secretary of the company, has been appointed assistant sales manager and also will continue in the post of secretary. Joseph A. Guyer, associated with the Jones organization since 1929, has been named advertising manager.

Trade Literature

Available Without Charge on Request to the Manufacturer

CORROSION - RESISTANT VALVES AND PIPING-Crane Co., 836 South Michigan Ave., Chicago 5, Circular 320, entitled "Corrosion-Resistant Piping Materials," contains descriptions and information on the complete Crane line valves, fittings, fabricated piping

For STRENGTH specify TRI-LOK

OPEN STEEL FLOORING



The locked-in strength of Tri-Lok enables it to stand up under heavy loadseven on long spans. No rivets, bolts, or welds are used in the construction of Tri-Lok; this feature eliminates the possibility of loose joints.

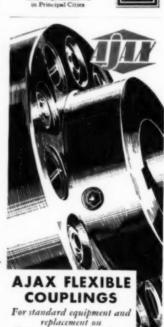
Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KR 1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Drave Bidg., Pittsburgh 22, Pa. Sales Representatives





Direct-Connected Machines AJAX FLEXIBLE COUPLING CO. INC. 17 English St. WESTFIELD, NEW YORK



Sprague & Henwood

CORE DRILLING MACHINES Prove
Their Worth In The Toughest Field
Their Worth In Combining Excellent
Assignments . . . Combining Excellent
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the reason why you should investigate these machines before buying Diamond Drills. • Design features, which are the result of years of practical field experience, include high grade castings, alloy steels, machine cut gears, etc., resulting in a machine of sufficient strength and stability to give excellent and uninterrupted service over long periods of continuous operation. • Four distinct swivel heads are available, as are four types of power units—Gasoline engine, Diesel engine, Air engine, or Electric motor. • You are assured low cost operation, less time loss due to breakdowns, few replacements and proved low-drilling costs. • We invite you to write for full information today.

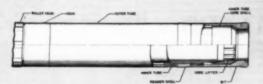
CORE DRILLING BY CONTRACT

Sprague & Henwood, Inc., is also prepared to undertake Core Drilling by contract. This includes test baring or mineral prospecting and also foundation exploration for dams, bridges, buildings, etc. Drilling grout holes and grouting also performed on contract basis. Thoroughly experienced supervisors and operators available for contract drilling operations. Send us your inquiries for Core Drilling by contract.



NEW: A DOUBLE TUBE CORE BARREL-for Better

Core Recovery. The Series "M" Double Tube Core Barrel differs from others in that the inner tube is equipped with a shoe or case extending to the face of the bit and housing the care lifter. This reduces the tendency to black.



"TRUCAST" BORTZ DIAMOND BITS -



A mechanically set Bertz Diamond Bit which provides uniformity of contour and gauge. Cen be furnished in all stendard sizes and many special sizes as well. "TRUCAST" bits have been used in all types of diamond drilling for years and have well proved their worth.

Sprague & Henwood, Inc. SCRANTON 2, PA.

and pipe coils to meet a wide range of corrosive conditions. Eight pages of condensed recommendations, description of alloy materials, and a corrosion questionnaire are included.

FLEXIBLE HOSE—American Ventilating Hose Co., 15 Park Row, New York 7. Catalog 39 provides construction, installation and engineering data, specifications and prices for the company's "Flexaust" lightweight flexible spiral-wire-reinforced hose, its "Portovent" ring-reinforced retractable hose and "Bloflex" non-reinforced collapsible hose.

A. C. GENERATORS AND SWITCH-GEAR.—Electric Machinery Mfg. Co., Minneapolis 13, Minn. Booklet No. 4200-PRD-194 describes switchgear for single and paralleled generator installations at voltages from 120 to 5,000 volts. Construction features are illustrated and described; specifications listed and connection diagrams given for generator panels, synchronizing panels, feeder panels, and distribution panels. New issue on E-M Synchronizer, No. 27, contains articles on "How to Select A.C.

Generators," "Paralleling A.C. Generators," "Boosting Capacity to Meet Electric Power Demand," and "Applying 'Packaged' Generators in Industry."

HARDFACING—Air Reduction Sales Co., 69 East 42nd 8t., New York 17. Reprint, "The Economies of Hardfacing." written by \$\frac{1}{2}\$. Barry and Albert Muller and appearing in article form in The Welding Journal, reviews the advantages of hardfacing and offers an analysis of the problems leading to the correct selection of hardfacing rods. Design and cost figures are offered, plus a selected bibliography.

ELECTRICAL PRODUCTS — Wagner Electric Corp., 6491 Flymouth Ave., St. Louis 14, Mo. New publication. entitled "Wagner Industrial Product News," is being mailed by Wagner Electric to industrial concerns on a bi-monthly basis to periodically circulate news of the company's electrical products. For further information or copy, write Editor, W.I.P. News, at the company's office.

CONVEYOR BELTING - New York Belting & Packing Co., 1 Market St., Passaic, N. J. Manual on the company's 1949 line of conveyor and elevator belting covers construction and engineering characteristics on all types of belts manufactured, data on carrying capacities, approximate belt weights and the selection and application of elevator belts.

PUMPS—Byron Jackson Co., Pump Division, Terminal Annex, Box 2017. Los Angeles 54, Bulletin describes and illustrates Byron Jackson's new complete line of single- and multi-stage vertical circulating pumps. The smaller sizes, from 5 to 12 in., are available in capacities from 20 to 3,000 g.p.m., with heads as required; and pumps larger than 12 in. are available in capacities of 1,500 g.p.m. and up, with heads as required; and pumps larger than 12 in. are available in capacities of 1,500 g.p.m. and up, with heads as required.

HOSE ACCESSORIES—Hose Accessories Co., 17th and Lehigh, Philadel-phia 32. Catalog 149 describes the complete line of LE-HI hose couplings, hose clamps, air valves and manifolds. Sizes and prices are included.

WATER DEMINERALIZATION—A. E. Tomkin & Co., 1828 Columbia Rd., N.W., Washington 9, D. C. Bulletin covering the new Hydrion water demineralizer includes specifications on the new high-capacity cartridge demineralizer, along with tabular data to readily determine cartridge life on any water supply. The Hydrion is designed for use in the servicing and maintenance of electric storage batteries and in supplying mineral-free water for engine-cooling systems.

DIESEL-ENGINE PYROMETERS— The Bristol Co., Waterbury 91, Conn. Bulletin Fi239 describes approved Navy and commercial-type diesel-engine pyrometers and thermocouples suitable for use on all types of diesel engines, with photographs and dimensioned drawings.

CRISHER — Pennsylvania Crusher Co., Liberty Trust Bidg., Philadelphia 7. Bulletin 5011 describes and illustrates the "Kue-Ken" jaw crushers, for which Pennsylvania Crusher was recently appointed exclusive eastern manufacturers and distributors. The bulletin featurers the advancements made in jaw-crusher design in recent years, outlines the "crushing without rubbing" principle of operation, which is exclusive with Kue-Ken crushers, and its other design features.

INDUSTRIAL WASTE DISPOSAL-The Bristol Co., Waterbury 91, Com. Bulletin 138, entitled "Industrial Waste Disposal," describes application of the company's automatic pH recording and controlling instruments and recording flowmeters to industrial waste-disposal operations.

BEARING OHERS—Trice Fuse Mic. Co., 2948 North 5th St., Milwaukee 17, Wis. Bulletin 21 features the "Vari-Peed" automatic ollers, said to operate on a new principle of visible, automatic lubrication for solid, wick and waste-packed bearings. The unit has removable wick retainer and variable feed control and is reported to be easily adjusted to feed filtered oil or liquids in a wide range of thickness.

HAMMER MILL—J. R. Sedberry, Inc., Franklin, Tenn., and Tyler, Tex. Bulletin 149 describes the Sedberry Junior Mill. Recommended by the manufacturer for relatively small grinding operations, the unit has a capacity of 300 to 1,200 lb. per hour, depending on the material to be ground.

LOCOMOTIVE CRANE — American Holst & Derrick Co., St. Paul I, Minn. Catalog 800-L-6 illustrates and describes the features, construction and application of the company's 30-ton diesel locomotive crane.

WELDING — Lincoln Electric Co. Cleveland I, Ohio. Eight-page rotogravure news sheet, "It's Welding Time," published regularly to present interesting case histories and ideas on how to use arc welding most effectively, is available on request.

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A Background of 22 Years of Design, Consulting, and Management Service to Coal and Mineral Industries in 28 States and 18 Foreign Countries.

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Itesigners of low cost roal preparation plants.

Tipples and structures.

THE PRINS COAL WASHER

TEMPLETON-MATTHEWS CORPORATION

Designing Engineers—Consultants—Builders
MODERN COAL PREPARATION PLANTS THRU
"CO-OPERATIVE ENGINEERING"

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Consult these SPECIALISTS

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

DU PONT ANNOUNCES

A New and Improved **Wood Preservative**

COPPERIZED C.

(Chromated Zinc Chloride)

Gives even longer-lasting all-round protection

Now-timber and lumber can have even greater service life than has been obtainable with standard CZC (Chromated Zinc Chloride) treatment. New Du Pont Copperized CZCbacked by ten years of laboratory research and field testing -gives promise of being the best all-round salt-type wood preservative ever developed.

In addition to showing far greater preservative effect than standard CZC (Chromated Zinc Chloride), this outstanding new Copperized product offers all these same advantages:

- Decay resistance
- Termite repellence
- Fire retardance
- Cleanliness
- · No odor
- Safe to handle

· Easy to paint

THESE & SIGNIFICANT TESTS SHOW ITS EFFECTIVENESS

- 1. Leach block test
- 2. Hardware corrosion test
- 3. Accelerated service test
- 4. Pilot plant treatments
- 5. Strength tests
- 6. Glow tests

Clip coupon for more facts on new Copperized CZC. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.



(Chromated Zinc Chloride)

E. I. du Pont de Nemours & Co. (Inc.) Gramelli Chemicals Department - CA-1 Wilmington 98, Delaware

Please send me more facts on new Copperized CZC.

announcing the NE TYPE 1002

Convertible SHOVEL, CRANE and DRAGLINE



a convertible unit with 21/2-yard shovel and 61-ton* crane capacity. Like all LIMA machines, the 1002 is engineered and built for maximum output at low operating costs and with minimum maintenance. It is equally effective as a shovel, crane or dragline, and readily converted from one to the other. Tested "on-the-job" for many months under the most gruelling conditions, it has established new records for speed and stamina. We proudly present it as

Other LIMA excavators include Shovels - 3/4 to 6 yards, Cranes 13 to 110 tons and Draglines variable. Write for descriptive bulletins.

*With 60-foot boom at 12 foot radius.

SEE OUR EXHIBIT BOOTH No. 1305 AT THE COAL SHOW

It will pay you to consult your nearest Lima Sales Office or representative before you buy your next shovel, crane or dragline. Offices in principal U.S. cities.

Lima Shovel and Crane Division

OTHER DIVISIONS: Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.





—with big-capacity cars that haul more built with U·S·S COR-TEN to last longer

BIGGER cars pay off because they permit full utilization of loading machine capacity—because they reduce the number of car changes... because they save in lubricants, repairs and man power needed.

This is particularly true when cars are built of U·S·S COR-TEN.

For Cor. Ten not only makes it possible to build cars of lowest weight per cubic foot of capacity but supplies superior resistance to atmospheric corrosion, gives added resistance to abrasion, shock and fatigue and this assures the longest possible car life.

16,000 mine cars, built larger, stronger, or lighter with U·S·S COR-TEN are today in service in America's most progressive mines.

They're working under all sorts of conditions. In thin seams and thick seams, in dry mines and wet mines. Although more than a thousand have been in use for well over ten years, we have yet to hear of a single failure due to wear.

Particularly significant is the fact that 53% of all Cor-Ten cars have been built on repeat orders—after the original cars had shown inservice how much better they would stand the gaff.

Today, U·S·S Cor-Ten is ready to help you build greater efficiency into mine cars. Our engineers will gladly cooperate with yours in applying Cor-Ten to your designs to assure optimum results at minimum cost.

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U·S·S HIGH STRENGTH STEELS

U-S-S COR-TEN . U-S-S MAN-TEN . U-S-S ABRASION RESISTING . U-S-S MANGANESE-NICKEL-COPPER

UNITED STATES STEEL

SPECIALIZATION RESULTS IN SOUND Growth!

FINANCIAL STATEMENT

At December 31, 1948

ASSETS

Cash in Banks and Office	
Investments:	
United States Government Bonds	\$1,754,656.84
State and Municipal Bonds	1,848,973.50
Railroad Bonds	712,169,19
Public Utility Bonds	436,748,76
Industrial and Other Bonds	576.254.31
Preferred Stocks	699,700.00
Real Estate (Home Office)	225,231.81

Total Investments . Premiums not over three months due . Accrued Interest and Other Assets (Net) .	6,246,734.41 1,342,995.72 9,014.13
Total Admitted Assets	\$9,324,915.89

LIABILITIES

Reserve for Losses	\$4,934,582.16
Reserve for Loss Adjustment Expenses	335,846.50
Reserve for Unearned Premiums	2,367,322.62
Reserve for Taxes and Expenses	373,947.00
Reserve for Commissions	190,000.00
Capital Stock \$ 500,000.00	
Surplus 623,217.61	

werprise	0.5,217.01
Surplus to Policyholders	1,123,217.61

Securities valued at \$343,440.37 are deposited with government authorities as required by law.

OFFICERS

COL. W. J. STITELER, JR.,

HARVEY N. SHROYER, Vice President & Chief Engineer DEE E. MILLER

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President: Greensburg-Connellsville Coal & Coke Co. Vice President: Carpentertown Coal & Coke Co. Director: Peoples City Bank McKeesport: Pa. Pittsburgh, Pa.

HAROLD J. BOULTON, Est. Boulton and Boulton Clearfield, Pa.

Total

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Reed. Smith, Shaw & McClay

Vice President, New Shawmut Mining Co.

Pittsburgh, Pa.

W. M HOLLENBACK
Director, New York Shipbuilding Corp. Philadelphia, Pa.

DEE E. MILLER

d Treesurer of the Company

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JOHN A. ROBERTSHAW
President Robertshaw-Fulton Controls Co.
Director, Barclay-Westmoreland Trust Co.
Director, Reynolds Metals Corp.
Greensburg, Pa.

\$1,726,171,63

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HARVEY N. SHROYER

esident of the Conceny Mountain Fuel Co. COL. W. J. STITELER, JR.

President of the Company Director, Barclay-Westmoreland Trust Co. Greensburg, Pa

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ALVAR G. WALLERSTEDT, C. P. A. Director, Standard Steel Spring Co. Director, Mine Safety Appliances Co. Pittsburgh, Pa.



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GREENSBURG, PA

SPECIALISTS IN WORKMEN'S COMPENSATION

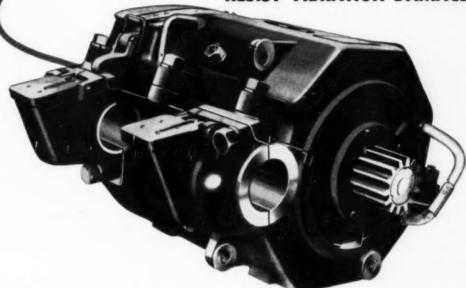
(Including deep and surface mining)

PUBLIC LIABILITY

(Automobile excepted)

Weldedby National-

YOUR MINE LOCOMOTIVE FIELD FRAMES
RESIST VIBRATION DAMAGE



More than half of the failures which occur in mine locomotive motors are from mechanical, rather than electrical, causes. Mechanical failures develop most often from misalignment and a lack of rigidity.

The split field frame is particularly subject to vibration and misalignment. It was designed for convenience of repair, but it increased the burden of maintenance tremendously.

At Bluefield, West Virginia, and Grundy, Virginia, we have shops especially equipped to weld old-type split field frames into solid box-type frames. Combined with prevenive maintenance—rebuilding motors at pre-determined intervals based on ton miles of service—average maintenance costs can often be just about cut in half. Our Bluefield and Grundy shops are experienced in all phases of mine locomotive maintenance, redesign and repairing.

Welding insures unchanging air gaps. Continuity of the magnetic circuit is made certain. Ball bearing failures are reduced. All in all, length of life is increased, possibility of sudden failure is reduced.

As each motor needs maintenance work, let National build real service into it—and start it on a preventive maintenance schedule.

Wherever you are our nearby Field Engineer is available

AT GRUNDY, VA., ADDRESS NATIONAL ELECTRIC SERVICE CORP.

* COLUMBUS 16, OHIO BLUEFIELD, W. VA.



Carlon Pipe has proved its superiority for two years under most severe acid water conditions in actual mine installations. Years of corrosion-free service, plus flexibility and toughness at all temperatures ranging from 50° below to 120° F. make Carlon Pipe the most useful pipe on the market. Lightness in weight, long length coils and simple, efficient fittings save many dollars in installation and maintenance costs. It is impervious to practically all inorganic chemicals and completely free from any electrolytic corrosion—cannot form a galvanic couple! That it completely meets the requirements of mine operations, is proved by practical tests made by leading mining companies.

PROVES AMAZINGLY DURABLE UNDER SEVERE TESTS

For many months one of the country's largest mining companies has been making practical tests of Carlon E Pipe in several of its mines. Here are the reports:

Mine A - 400 ft. of Carlon E Pipe in service 6 months show no signs of wear or effects from acid mine water.

Mine B—200 ft. of Carlon E Pipe in service 8 months—same report and superintendent estimates that if iron pipe had been used in this section it would have been necessary to replace 4 or 5 times.

Mine C—Has 5200 ft. of Carlon E Pipe in use of which 1600 ft. has given unfailing service for 10 months. Several weeks ago 6 men installed 2 pumps and 3000 ft. of Carlon E Pipe in one day. Labor cost \$84.30. Estimated labor cost for ordinary black pipe, \$262.90. Quick installation of Carlon E Pipe also saved production from being cut in half by sudden water.

AVAILABILITY

Available in standard pipe sizes from stock and priced competitively in sizes ½", ¾", 1", 1½" 1½", 2", 3", coiled, 4" and 6" in straight lengths.

SPECIAL TRIAL OFFER

Carlon E is furnished in 200 ft. coils for easy handling. To enable you to make a practical trial and thorough test of this new synthetic pipe in your mine we will furnish one coil (200 ft.) of the 2" size at the 2000 ft. quantity price of 40¢ per foot, or \$80.00 on the condition that if it does not prove entirely satisfactory within a period of one year it may be returned for full credit. Order today.





From the working face to the tipple is one of the most important distances your coal will travel! And it is between those two points that CINCINNATI Conveyor Belts make a big difference in your final profit figures - first, by moving coal out continuously so that no lost time occurs and, second, by carrying heavier loads without breakdown. Insure a faster production pace with CINCINNATI "Conveyorized Mining".

CINCINNATI

CINCINNATI RUBBER MFG. CO.

CINCINNATI 12, OHIO



Make your coal mine a gold mine

It's as simple as putting a Bucyrus-Erie to work, for fast smooth-working Bucyrus-Eries, like the 1½-yd. 38-B pictured above, not only increase profits by boosting production, but save you money on operating and maintenance costs. Watch one of these shovels in action and see how responsive, full-feel controls speed the operating cycle for more passes every hour . . . how bal-

anced speeds and power, superior weight distribution and efficient front-end design contribute to smooth operation that's easy on man and machine alike. Notice the unusual accessibility and durable construction of machine parts that makes maintenance easy, keeps costs down. Then see your Bucyrus-Erie distributor for more details on the outstanding machines in the Bucyrus-Erie ³%- to 2½-yd. line. For latest information on larger machines, write

The BEST buy Bucyrus, the best BUY in excavators

Bucyrus-Erie Company

South Milwaukee, Wisconsin

COST REDUCING

For nearly 50 years we have pioneered in the construction of equipment designed to stand up under the hardest kind of service—and low enough in original cost to keep overhead and depreciation within reasonable limits.

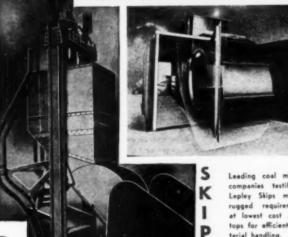
On this page is just a sample of the operating equipment we supply. Other items available: Steam or Electric Hoists and Haulages, Self Dumping Sefety Cages, Best or Dicknerge Skips, Overturning Skips, Overturning Cage (End Dump), Solid Car Side Dump Cage, Buttom Loading Skips, Hard Steel Liner Head Sheaves, Shaff Bearings, Rotary Dumps, Mine Fans, Mine Pumps, Revolving Slate Dump Larries, Rectangular and Beehive Coke Oven Machinery, Fort-Pitt Mine Equipment, and allide dequipment.

We have no H "standard" hoist line each design is based on a study of your needs. Steam and electric shaft and slope hoists T available.



CAGES

Simplicity, ruggedness, safety and low maintenance are stressed in the design of Lepley Cages -your enswer for efficient handling.



Leading coal mining companies testify -Lepley Skips meet rugged requirements at lowest cost . . tops for efficient material handling.

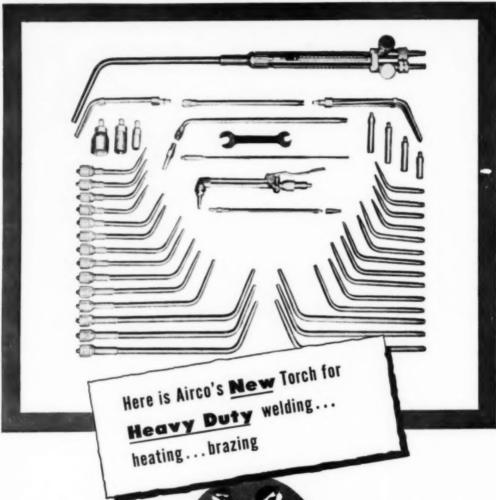
Reversible supply or exhaust fans to suit your mine. Sizes up to 35 ft. in dia. by 8 ft. face. Produces 700,000 cu. ft. min. at 10.3 inches water gauge.

Write-ASK FOR DESCRIPTIVE BULLETINS

SEND US YOUR PROBLEMS

SVILLE MFG. & MINE SUPPLY CO. CONNELLSVILLE

COAL AGE . May. 1949



The new Airco 800 Torch is designed for tough, heavy-duty jobs. As shown in the illustration, the torch operates with a complete range of welding tips (with or without individual mixers) as well as heating, brazing and a variety of tips for other uses. No other torch can offer this wide operating range.

The torch head is of durable, long-wearing monel metal; thus fewer torch head replacements, and lower maintenance costs result. The general design of the new Airco 800, plus flexible 1/4" or 5/16" I.D. hose, assures perfect balance and ease of manipulation... lowered operator fatigue.



With the addition of a cutting attachment, the Airco 800 is easily converted to handle general shop cutting work.

If you would like more information about this torch, or a FREE demonstration right in your own shop, address Dept. AM-8471, Air Reduction, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas. On West Coast: Air Reduction Pacific Company, San Francisco 4, California.



Handquarters for Brygne, Acetylene and Other Coxes . . . Carbide . . . Cas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessarias



Conditions today have made necessary a more ambitious cost-reduction-through-modernization program. Out of such procedure comes the earnings that make a better net profit and also give you numerous added benefits that are invaluable.

Years of practical experience, through past changing eras, have given us the opportunity to observe most mining methods under various working conditions. Thus our "on the field" contacts, together with our close cooperation with mining operations throughout the world, can pay high dividends to you now.

Our services are rendered on a time and material basis — you are given a definite breakdown of every item that goes into your mine.

We are not limited in service to those companies whose tonnages run into the millions. Many of our assignments have been for producers of smaller tonnages.

Let's talk it over. Consultation does not entail any obligation on your part.

SCOPE OF SERVICES

- Design and construction of new plants and their various units.
- Organization, operation, and management of mines.
- Below ground modernization and mechanization.
- Reconstruction, revamping, or improvement of existing plants.
- General consulting work regarding power, equipment, operation, and various mining problems.
- Valuations for financing, fire loss, taxation purpose — reports and appraisals.

We work with undivided responsibility to you at a fixed fee. We are not hampered by any connections which might prejudice the true professional engineering approach to your problems.

BETTER QUALITY IS ANOTHER

AGG

ALSO IMPROVED WORKING CONDITIONS

AGG

STILL ANOTHER IS INCREASED CAPACITY

AND YOU GREATLY IMPROVE YOUR COMPETITIVE POSITION

ALLEN & GARCIA COMPANY

CONSULTING AND CONSTRUCTING ENGINEERS

332 S. MICHIGAN AVE., CHICAGO 4, ILL. . 120 WALL ST., NEW YORK, N. Y.

SEE HENDRICK **SPECIALTIES** in Booth 324

at the Coal Show in Cleveland

To illustrate the great range Hendrick can furnish in perforated metal, a perforated screen of 15/16" steel with 2-1/2" round holes and 31 gauge brass with .020" round perforations will be shown.

Another special exhibit will be an electrically operated Hendrick Testing Screen.

The wide Hendrick line of production-speeding equipment for the coal industry includes Flanged-Lip Screens, Wedge-Slot Screens, Vibrating and Shaking Screens, Elevator Buckets, Flights, Shaker Conveyor Troughs and Ball Frames.

Hendrick Flanged-Lip Screens

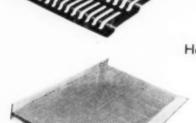
For screening and dewatering coal. With short, medium or long slots. 148 different standard slot sizes are available. The staggered slots, tapered in the direction of the flow, are practically nonclogging. Write for new edition of Flanged-Lip Screen Booklet.

Hendrick Wedge-Slot Dewatering and Dryer Screens

Moisture and under-size particles clear rapidly because of the uniquely designed profile bars, with openings enlarging downward. The accurately spaced slots extend uninterruptedly the entire length of the screen. Constructed with various types of profile bars designed expressly for specific applications. Write for detailed information.

Hendrick Open Steel Flooring

90% open area insures minimum obstruction of light. unimpeded ventilation. Square-edge, uniformly spaced bars provide non-slipping, level walking surface. Pressure-formed construction makes every Hendrick Mitco panel an exceedingly strong, integral unit. Write for Hendrick Mitco Products Catalogue.



Hendrick Perforated Plate

For shaking and vibrating screens, Hendrick Perforated Plate will retain uniformity of mesh throughout an unusually long service life. Toughened by heat treatment for abrasion-resistance. Supplied, flat or corrugated. with any desired size and shape of opening.

Hendrick Shaker Conveyor Troughs and Ball Frames

Troughs are made of high carbon steel that offers great resistance to abrasion. and to bending or breaking under weight stantial support whatever the floor con- Mitco Open Steel Flooring ditions.



HENDRICK

Manufacturing Company Perforated Metal Screens 41 DUNDAFF STREET, CARBONDALE, PENNA.

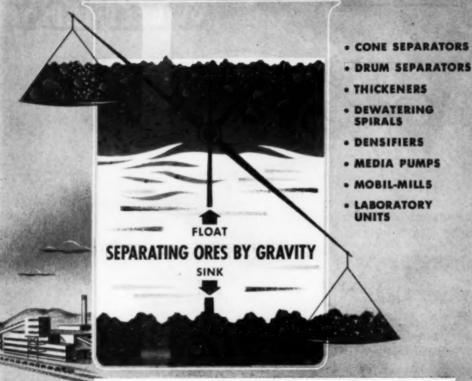
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85% of all HMS plants in operation are WEMCO equipped!

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• An important part of every WEMCO HMS installation is the technical experience and operation know-how that assures efficient, profitable ore recovery.

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WKE (HMS) Mobil-Mill . Coal Spiral . Standard Thickeners (HMS) Thickeners . (HMS) Media Pumps . Hydroseparators (HMS) Densifiers . (HMS) Separatory Cones . "SH" Classifiers Sand Pumps . Conditioner and Agitators . Fagergren Flotation Machines . Dewatering Spirals . (HMS) Laboratory Units

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B-Z Round-Rod SCREENS

When you buy B-Z Round-Rod Screens, Bixby-Zimmer engineers the entire installation to meet your screening specifications. B-Z Screens are "tailor-made" to your plant equipment — in any size, dimension, shape or mounting.

For all-around improved coal screening, install B-Z Screens. You'll get more exact sizing, more uniform grading and cleaner dewatering. Stainless steel, all-welded construction adds to B-Z Screen life — already multiplied by proved B-Z Round-Rod design.

Any way you look at it, B-Z Screens add up to increased profits from lower cost-per-ton screening. Write now for full facts on B-Z Round-Rod Screens.

WE'LL SEE YOU AT THE MINING CONGRESS CONVENTION!

Be sure to stop by the B-Z exhibit at the Mining Congress Convention at Cleveland, Ohio, May 9th-12th. We'll be located at Space A107, in the Main Exhibition Hall, Cleveland Auditorium.



Famous Round-Rod design allows B-Z Screens to maintain constant openings, even with 50% wear!



BIXBY ZIMMER ENGINEERING CO.



The Heyl & Patterson Cyclone Thickener is a hydraulic device made to separate a suspension of solids in water into a thickened underflow and a low concentration overflow. It differs from the ordinary gravity type of settling basin by using Centrifugal Force of up to 12,000 times gravity to separate the solids from the fluid.

Heyl & Patterson believes that, after many years of laboratory experiments, the CYCLONE THICKENER Now can be offered to the Mining Industry as a practical Piece of Equipment, capable of performing efficiently under rugged operating conditions.

Form your own opinion after witnessing a demonstration of the H&P Cyclone Thickener in Booth No. A-424 at the Coal Show.

In Booth A-424 at the Coal Show

Ore Bridges
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SEE HOW the

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TF you have problems involving the application of speed reducers and \mathbf{L} other transmission products to belt and scraper conveyors, bucket elevators, feeders, railroad car dumps, loading booms and similar services, we believe you will be interested in the Jones bulletins and catalogs listed below.

This technical literature plus a vast amount of data in our files cover most of the drive problems likely to be encountered in the production and preparation of coal.

The accompanying illustrations show some typical applications of Jones drives in leading mechanized mines in Southern Illinois. In the preparation plants of Bell & Zoller Coal Mining Company, Peabody Coal Company, Pyramid Coal Corporation and the United Electric Coal Company, Jones drives are extensively used. At the Ziegler preparation plant of Bell & Zoller, for example, some 25 Jones speed reducer units ranging from 5 Hp. to 100 Hp. are in service.

In every coal mining field you will find Jones drives standing up under the severest punishment of present day production schedules. We believe you will want to know more about how and why these drives can "stand up and take it." A line from you will bring any of the bulletins or detailed information on any drive problem that you



ANY, OR ALL, OF THESE JONES CATALOGS WILL BE SENT ON REQUEST

No. 70-Jones Herringbone Speed Reducers

No. 71-Jones Cut and Mold-ed Tooth Gears

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W. A. JONES FOUNDRY & MACHINE CO.

4401 Roosevelt Road, Chicago 24. Illinois

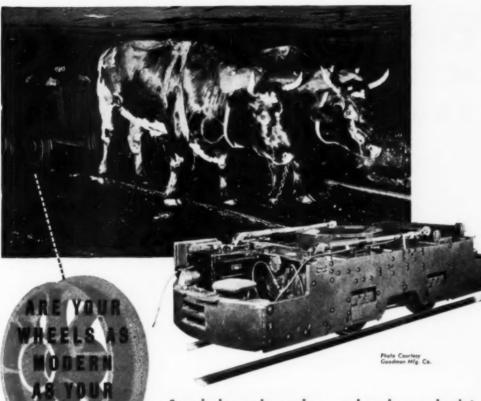
REDUCERS • PULLEYS • GLARS • V BELT SHEAVES • ANTI-FRICTION PILLOW BLOCKS FRICTION CLUTCHES • FLEXIBLE COUPLINGS



Unfrightened by dire predictions, leaders of American business always have planned with confidence in the future . . . and, in the long run, their faith has paid off. Such courageous leadership helps to create good business.

Good business means jobs for those who want to work. It's the best defense against the termites who are working to undermine the individual liberties Americans enjoy.





Speeds have changed . . . and so have wheels!

Under today's stress of high production, the load of stepped-up tonnage must be transported rapidly on efficient, dependable wheels. Sterling Cast Steel BALANCE DESIGNED Wheels are engineered to take these increased demands more efficiently. Sterling BALANCED DESIGN Wheel assures power-saving, long mileage at no additional cost.

Consult a Sterling Engineer—let him help you make your wheels as modern as your methods.

REPRESENTATIVES: J. E. Nisser, 720 Roselawn Ave., Pithsburgh, Pennsylvania.

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Click-click! Make Money That Quick!!

The Canton Automatic Door opens with a click closes with a click. There is no slow down or hesitation. It is activated by the weight of engine or cars on special rail, springing the door open, and after the train passes, springing the door shut. There is nothing protruding from the walls. Action and reaction are accomplished from mechanical track mechanism. Operators can see the money-saving and money-making features of such an automatic door. Trips go through at normal operating speeds with no hesitation. The trapper boy formerly required for opening and closing doors is no longer an accident liability. Stopping and starting the trip with expensive delays is no longer necessary. Eliminate these expenses and see how quickly the Canton Automatic Mine Door pays for itself. paying extra dividends year after year.



Photographs show actual installations of the "Canton" Automatic Mine Door, and the "Canton" Switch Throw, self-paying adjuncts to every profitable mining operation. Names of users on request.

"Canton" automatic Switch Thrower



Eliminates the liability of a man, fumbling over the tracks, manhandling switches. Any extra person detached from the train is in more danger of accident. Canton Automatic Switch Throwers do an expert switchman's job, and do it faster with complete safety. Automatically throw switch points ahead or behind trip, or both. Trip can maintain full speed. Switch can be operated by remote control, by the motorman or by hand, and is adapted for use as an automatic derailer. Write for complete catalogs using street and zone number.

American Mine Door Company

2057 DUEBER AVENUE CANTON 6, OHIO

Study fuel costs at long range...

then power your plant with B&O Bituminous Coals



Power plant design and operation present few problems to an industrial engineer. But, truly economical performance rests on added knowledge—of reserves and availalgility of fuels—of their cost relationships and combustion characteristics.

In planning the operation of your power plant, study the value of bituminous. Check production cost at the mines. Look at delivered cost of Btu's. Study how carefully the coal you order is sized and cleaned so that waste is avoided. Check availability of continuous supply in normal times and in emergencies. Find out if reserves are extensive enough to assure future supply,

In the coals produced on the Baltimore & Ohio, you'll find the right answers to low-cost, long-range supply. Whether you need high-, medium-, or low-volatile coals, they're here in abundance. Ask our man! He shall be glad to supply technical help on every phase of coal production, preparation, distribution, and utilization.

DITUMINOUS COALS FOR EVERY PURPOSE

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BALTIMORE & OHIO RAILROAD

Constantly doing things-better!



3 9 5 CUBIC FEET (LEVEL LOAD) IN EACH DIFFERENTIAL MINE CAR SHOWN IN THE PHOTO ABOVE

NORMAL LOADING AVERAGES ABOUT 13 TONS PER CAR CAR DIMENSIONS - HEIGHT 41", WIDTH 6'-6", LENGTH 21'-6"

DIFFERENTIAL MINE CARS FEATURE

MAXIMUM CAPACITY THOUGHTFUL DESIGN SUPERB WORKMANSHIP FIRST COST ECONOMY

UTMOST ROADABILITY SAFETY WITH SPEED PRACTICALITY IN ALL DETAILS **ECONOMICAL OPERATION**



DIFFERENTIAL SUPPLY CARS

Use supply cars instead of mine cars for handling mine timbers, track materials, concrete blocks and bricks, and miscellaneous mine supplies. Designed for the job, they are easy to load, easy to unload, and yield a handsome return in time and labor saving.

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO, U. S. A.

Builders of Haulage Equipment Since 1915 MINE CARS MINE LOCOMOTIVES STOCKPILING CARS BURDEN BEARING LOCOMOTIVES

ROCK LARRIES DUMPING DEVICES



Standardized Lubrication Practices

for HIGH VOLUME-LOW COST PRODUCTION ...

The penalties imposed upon modern day, expensive precision-built mining machinery by exposure, grit, dirt, and severe continuous usage resulting in low volume, high cost production can be avoided with thorough lubrication, by standardizing lubrication practices.

Lincoln Engineered Lubricating Equipment, from the simplest manual system to complete centralized lubricating systems, can help you lower your operating costs and get the most out of your lubrication dollars.

Call your Lincoln distributor or the Sales and Service office nearest you for expert lubrication advice. Ask for copies of Bulletins on Lincoln Centro-Matic Systems and Industrial Lubricating Equipment Catalog No. 63. They will be sent upon request.

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Bullnack Surface Chack Grease Fitting...the ern fitting with the





ENGINEERING COMPANY . 5729 NATURAL BRIDGE AVE., ST. LOUIS 20, MO.

COAL AGE . May. 1949

See LINCOLN at the COAL SHOW-Booth A-117

231

CASE STUDY NO. 2:

Metalworking Plant Surprised!

This big fabricator reported all scrap being turned in. When told needed scrap includes old equipment, not just "production" scrap, they uncovered extra tons of iron and steel. CASE STUDY NO. 1: 88 Carloads

Here's a photographic equipment manufacturer with a systematic metal-salvage program. No more scrap, they said. Yet, after more careful study, they found 88 carloads of heavy iron and steel scrap in a 30-day period!

CASE STUDY NO. 3:

Paper Converter Delivers!

This plant replaced 3000 obsolete machines with new ones. Held old ones for occasional spare parts. Changed mind, scrapped 2800, reduced inventory, got high price for scrap.



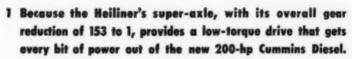
You, too, may have heavy iron and steel scrap you don't know about. It's the heavy scrap that makes the best steel and by processing faster, increases steel output. Appoint one top official of your company to find it. Today, it's dead inventory. Tomorrow, it can be money in the bank. But better than that, it can help to build the one million tons of reserve scrap that we need to increase production for domestic use and for security purposes. Remember-scrap reserves are low, the price of steel scrap is high. Help America and yourself by putting your scrap back to work.

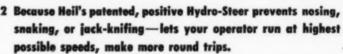
COAL AGE



Heiliner Gives You Faster Haul Cycles

Puts More Profit in Your Pocket





You can count on larger earthmoving profits, when you have these and many other Heiliner features working for you. Send for complete information about the Heiliner and the complete line of Heil earthmoving equipment. Check the coupon and mail it today.

The Heiliner is easy to maneuver, Yeur operator can turn the 39-foot unit in a 22-foot radius. He physical effort is required — the Hydro-Steer dees all the work.

Heiliners cut maintenance down time and use it to move more dirt. The full-flooting axis shafts and the wheel divine-gors are fully occasible on removal of the hub caps. You don't have to pull the whoels.

The Helliner's cable power-central unit gives you long life and low-cast operories. The smooth-operating brokes and cushioned cluth action eliminate jerks and shocks—reduce wear an ecol. Finger-tip central groyour operater last, efficient your operater last, efficient



THE FEIL CO.

THE HEIL CO.

Dept. 7659, 3076 W. Montono Street, Milwoukee 1, Wisconsin Please send me a Bulletin describing all the many advantages of the amazing Heiliner.

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Company

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THE BAKER MINE TRACTOR is a permissible rubber-tired, battery powered unit designed for low-seam operation. Coupled to various types of trailers, it has ample power to handle any trackless transportation job—supplies from yard or track to work site, coal from loaders to main-line, face equipment from section to section, machinery and parts to remote areas, and mine personnel to and from sections. Baker Mine Tractors provide flexible, trackless, mobile power wherever it is needed in a mine.

Two models: 273/8" and 32" overall height. Inquire also about the Baker Mine Timbering Machine and the Baker "Trike", mine supervisor's car.

Exclusive Coal Mine Representatives

J. H. FLETCHER & CO.
Chicago, Illinois • • Huntington, W. Virginia

Manufactured by
THE BAKER-RAULANG CO.
1213 West 80th Street · · · Cleveland, Ohio



Two 14-men crews on trailers pulled by separate Baker Tractors on their way to remotely located sections. Where sections are near together, one tractor handles two trailer-loads.



(Above) Tractor hauling trailer carrying replacement shortwall catting machine to working face. (Below) Tractor drawing a load of posts and bars to section where Baker Timbering Machine is erecting timbers.



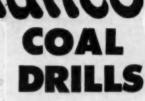
Baker MINE EQUIPMENT

You'll See

THE LATEST IN ENGINEERING ...

When you see

THE NEW Parmanco



ROOTH ROO

BOOTH 609 COAL SHOW

The drill pictured here is SELF-PROPELLED — HAS HY-DRAULIC FEED and is ONE-MAN OPERATED. This PAR-MANCO Coal Drill will drill 2½ inch holes at a speed of up to five feet per minute in #5 coal. Equipped with traction and a complete hydraulic feed, the drill is operated by one man from the control seat. With a 12 h.p. gas motor, all units are completely self contained and enclosed in oil-tight cases.

The following optional equipment is available [1] A Trailer Hitch which permits drill to perform light tractor work. [2] Larger tires (6.00x16).

We will also display a NEW HORIZONTAL DRILL and an improved VERTICAL DRILL.

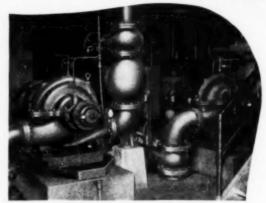
PARIS MANUFACTURING CO. PARIS, ILL.

Good Habit for Piping Purchasers see the CRANE line <u>first</u>

—and see what a truly complete piping materials service can do for you. Just remember: if it's piping equipment for mines, most likely it's in the broad Crane line. One order covers everything for the job. No one can give you better service than Crane, through a network of well-stocked cooperating Branches and Wholesalers backed by large factory stocks.

Standardizing on Crane as a Single Source of Supply simplifies every piping procedure, from the design to erection and maintenance of systems. One Responsibility for valves, fittings, pipe and accessories makes for better installations, avoids needless delays. And for Highest Quality in every item, Crane Quality stands unsurpassed for more than 90 years.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. Branches and Wholesalers Serving All Industrial Areas



PRIMARY SPRAY PUMPS in a large breaker plant, featuring Crane Standard Iron Body Wedge Gate and Check Valves.

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FUEL OIL PUMPS in boiler room at a copper mine. Valves, fittings, and accesseries are from the complete Crane line.





IN A HYDRO POWER PLANT, Crane 250-pound Ferrosteel Wedge Gate Values typify the wide range of materials supplied by Crane for mine operations.

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AND HEATING

FOR EVERY PIPING SYSTEM

Every requirement for high-tonnage, low-cost hauling!

HIGH SPEED!

30 mph. for long runs

BIG CAPACITY! 30-40 ton payloads

GREAT POWER! 300 hp. to climb grades



100% TRACTION! for soft, slippery surfaces

RUGGEDNESS!

for low-maintenance operation

MANEUVERABILITY!

for tight spots and curves

PERATING records at mines using Walter Tractor Trucks consistently show more tons hauled per truck, per shift-fewer hauling units needed to maintain capacity -less lost time and expense for repairs and down timelower tire and road maintenance costs-longer truck life.

Walter Tractor Trucks have engineering features found in no other trucks, notably the Walter 4-Point Positive Drive which assures positive traction in each of four driving wheels, to prevent wheel-spinning and stalling on soft or slippery surfaces and steep grades. Walter suspended double reduction drive has less unsprung weight for smoother riding and minimum damage to roads and tires. Tractor type transmission, chassis, axles and other parts stand up under severest stress.



WRITE for detailed felder. "High-Tennege Hawling with Walter Tractor Trucks". which explains advantages and features for mine

TRACTOR TRUCKS

WALTER MOTOR TRUCK CO. Ridgewood 27, Queens, L. L. N. Y.

COAL AGE . May. 1949

Here's the Answer to LOW-COST housing



♠ Ask for our representative to call at your convenience. He will supply you with details on plans and prices and cite to you examples of industrial building projects already completed by our organization. Investigate NATIONAL HOMES. You, too, will find them ideal for industrial housing.

FROM \$3,000 AND UP

High-speed precision machinery in our modern factory converts finest materials into panels and parts for adaptable, quickly-erected, conveniently planned homes. Our field construction crew handles all details of erecting the homes complete and ready for occupancy on any site you choose. The houses may be moved from one location to another. Prices of completed homes vary according to size and optional features - such as porches, garages, type of heating, extent of plumbing, wiring, etc. We invite you to turn your low-cost housing problem over to us.

NATIONAL HOMES CORPORATION • Lafayette, Indiana, U.S.A.



THE cost of any truck is the total amount of I money you invest in it ... as long as you own it.

That cost is usually far different from the truck's original price!

It can be far higher, for example, when you buy a truck that's too big or too small for the hauling

In such cases, costs go up rapidly . . . in wasted gas

and oil, in repairs, in shortened truck life, in time lost on the job.

It's important, therefore, that your truck be engineered and built . . . to fit your job! That's what is meant by a "Job-Rated" truck!

Only Dodge builds "Job-Rated" trucks. Every one of these trucks has the right one of 7 truck engines . . . "Job-Rated" for top efficiency and maximum economy. Every Dodge has the right chassis unit . . . from engine to rear axle . . . "Job-Rated" to fit your job, to save you money.

So if you're looking for the "lowest-cost" truck . . . ask your Dodge dealer to show you the "Job-Rated" truck that fits your job! Such a truck will give you the best value in transportation you can buy.

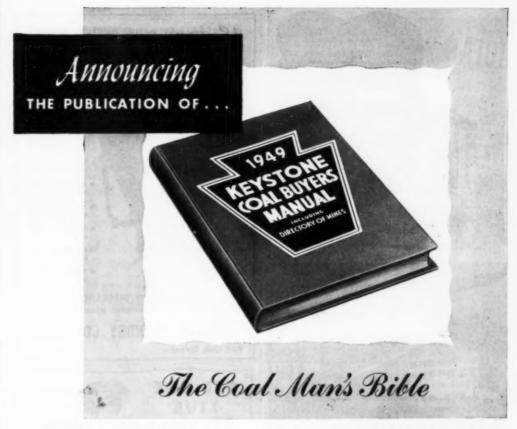
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A complete guide to the Coal Industry, including kinds of coal and their characteristics, geographical locations, coal mines, operating companies, sales organizations, mechanical cleaning plants, maps, etc. Completely indexed by companies, mines, seams and location. Also includes indices of coal operating and coal sales executives.

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Burns Any Type of Fuel

The "Sutton" Sand Dryer may be fired with any type of fuel, While most "Sutton" Sand Dryers are equipped to burn coal, they can be furnished with burners for natural gas or fuel oil.



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- No skilled labor necessary
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After you have shaken hands with this friendly fellow be sure to see the: coal convention

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HINGED FLEXCO BELT FASTENERS...
the new separable fasteners for conveyor
belts.

FLEXCO HD BELT FASTENERS and RIP PLATES for conveyor belts.

ALLIGATOR BELT LACING for flat transmission and conveyor belts.

See You in Cleveland!

PLEXIBLE STEEL LACING COMPANY

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If you will write on your letterhead giving official title, IOX-RUST 506.

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WAS there ever such an opportunity to get started in electrical maintenance and repair—and at top-notch wages?

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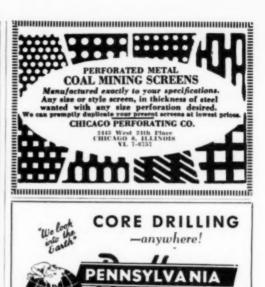
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EXPLOSIVE BOXES



Approved by the Pa. Dep't, of Mines, these rigid non-conductive explosive boxes represent a prime safety investment. Mude entirely of wood—tongue-grooved and dovetailed construction ... on metal parts ... automatic lock ... rubber band spring ... moisture-resistant. Box sizes are based on 194 % 80° stricks.

POWDER BOX PRICES ARE AS FOLLOWS:
No. 9. . \$2.05 ea. No. 25. . \$4.20 ea.
No. 12. . 2.40 ea. No. 36. . 5.30 ea.
No. 16. . 2.85 ea. No. 50. . 6.40 ea.
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DETONATOR BOX PRICES ARE AS FOLLOWS:
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WOOD TAMPING POLES

For temping explosive shots. Pales are made of hardwoods....lengths to 10 ft. Price per lineal ft. 1" die, 6c, 13/4" die, 9c, 13/4" die, 10c, 13/4" die, 13/4"

SECTIONAL TAMPING POLES

Poles are made of wood coupled together by means of a wooden pin held in place by a rubber band. Easily and quickly assembled 4* dia. Head Block, \$3.70 ca, 4* dia. Coupler, \$3.40 ca, Poles are 1½* in dia., 1½* lead, \$2.40 ca., 14* long, \$2.60 ca., 10* long, \$3.20 ca. Special diameters and lengths can be furnished.

J. V. HAMMOND CO., Spangler, Pa.

We also manufacture Shot Firing Units, Wooden Mallet and Wedge Sets, Trolley Poles, Sounding Sticks, Mine Rollers, Insulation Blocks and Brake Blocks.



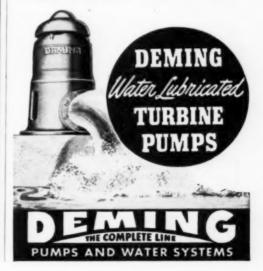
Mine gathering, automatic pumping from pit and other mine services are performed at low cost by these new Deming Self-Priming Centrifugal Pumps. Capacities range up to 250 g.p.m. with heads up to 100 feet, at motor speeds of 1750 R. P. M. Complete description in BULLETIN 3300. These pumps will be on exhibit for your inspection as noted below.

See our exhibit at Boeths 1558-1560 American Mining Congress Coal Convention & Exposition, May 9-12, Public Auditorium, Cleveland, Ohio

Also at our above-mentioned exhibit will be the popular Deming Deep Well Turbine Pump widely used for mine gathering service and general water supply.

Vertical, multi-stage centrifugal pump construction of Deming Turbines permit operation through bore holes to dewater isolated or closed-off sections. Capacities range from 15 to 3000 g.p.m. Complete description in BULLETIN 4700-8.

THE DEMING COMPANY . 533 BROADWAY . SALEM, ONIO





Low in Cost.

Easy to Install.

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NUSSCO AUTOMATIC MINE SIGNALS

Save Trip Time

A two wire cable connects two or more signals together into one block. Only one signal can show procood on the entrance of trip, all other signals show step.

NACHOD & UNITED STATES SIGNAL CO.

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INCORPORATED

CESCO ELECTRICALLY OPERATED TRACK SWITCH

Threwn by Motorman

Operates Switch Safely Saves Time and Money

This modern track switch is thrown swiftly and safely by motormen as they sit in their cabs. It saves time and money, and is fool-proof and dependable!

> Over 40 years experience manufacturing **ELECTRIC TRACK SWITCHES**

Write for Catalog CHEATHAM ELECTRIC SWITCHING DEVICE CO. INCORPORATED

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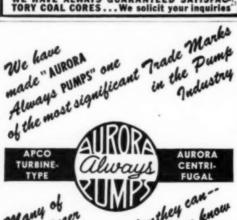
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WE HAVE SPECIALIZED IN TESTING BITUMI-NOUS COAL LANDS FOR MORE THAN 40 YEARS

GASOLINE - STEAM - ELEC-TRIC ORILLS - WE PRE-GROUT SHAFT LOCATIONS . HORI-TONTAL DRILL HOLES FROM 3" TO 16" FOR DEWATER-TORS ARE HIGHLY SKILLED



WE HAVE ALWAYS GUARANTEED SATISFACTORY COAL CORES...We solicit your inquiries



buy Awara Pumps when they canbecause they know Aurora Dumps deliver always of Serving YOU





Sink-Float Magnetite

"MAGNAFLOAT"

Correctly sized Magnetite for sink-float treatment of coal or other minerals. Standard grinds;

Grade A-Approximately 100 mesh with 60 to 70% passing 325 mesh.

Grade B-Approximately 100 mesh with 90% passing 325 mesh.

Other sizes to order.

Executive Offices

FOOTE MINERAL COMPANY, INC.

502 Germantown Trust Bldg.

Philadelphia 44, Pa.

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Over 50 years grinding experience.

IMPORTANT ANNOUNCEMENT

To organizations with their own sales force in contact with firms in the Mining Industry

A group of British Companies manufacturing detergents, polishes and cleaning preparations of importance to the mining industry have decided to place their United States selling arrangements in the hands of area sales distributors and/or non-competitive manufacturing organizations which already employ their own sales force and are desirous of widening their range.

The products are manufactured to the highest standards, and are well presented. The selected distributors will be given ample sales promotional support. The President of the Companies concerned is now in New York and organizations of standing are invited to communicate with him personally.

OPPORTUNITIES . EQUIPMENT-USED or RELEASED EMPLOYMENT . BUSINESS .

Not available for equipment advertising 90c a line. Minimum 4 lines. To figure advance payment count 5 average words as a line. (See § on 80s Numbars.) INDIVIDUAL EMPLOYMENT WANTED undisplayed deventing rate is one-half of above rate, payable in advance.

INFORMATION: BOX NUMBERS in care of any of our New York, Chicago or San Francisco offices count

one additional line in undisplayed ads. DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE

The advertising rate is \$7.25 per inch for all advertising appearing on other than a con-tract basis. Contract rates quoted on request, AN ADVERTISING INCH Is measured 1/4 Inch vertically on one column, 3 columns-30 is C.A. -to a page.

NEW ADVERTISEMENTS received by 10 A.M. May 17th will appear in the June issue subject to limitations of space available.

REPLIES (Box No.): Address to office nearest you. NEW YORK: 330 W. 42nd St. (18) CHICAGO: 520 N. Michigan Ave. (11) SAN FRANCISCO: 68 Post St. (4)

POSITIONS WANTED

MINING-MECHANICAL ENGR. wishes per-manent connection; wide experience plan-ning, developing, operating complete coal fine complete coal developing of the complete coal draftsman. Sober, energetic, cool health and owns equipment, PW-8198, Coal Age.

MINE SUPERINTENDENT where permanent connection with reliable company. Wide ex-perience, planning, developing complete coal properties, high or low seams, good producer. Expert mechanical mining man. Sober, ener-getic, good health, PW-8581, Coal Age.

FOR LEASE: 174 ACRES
LEVEL LAND, PARTY ORILLED

JOHNO STRIP COAL
Jackson Tewnship, Mahening County
Intent to forty food orevloarden. No hard rock,
no to Ballroad and within 14 miles of Toungsm. Give financial and other qualifications with
outry. Can you dell! Owner:
and Kirk, Aris, Alakson. Phone Meblis 3-7030 inquiry. Can you drill? Donald Kirk, Axis, Alahama.

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FUSINESS OPPORTUNITY

For Lease: 400 to 500 acres coal, one 36" seam excellent domestic and one 36" seam high grade steam coal. Railroad facilities pletely equipped for 360 to 500 tons daily production with two A.C. cutters, four shaker conveyors, plenty of rail, cars. two haulisge locomotives and other equipment. Motor generator set to be supplied by operator or can use all belt operation and eliminate need for generator. Easy trucking distance from Oak world), T.V.A. Watts Bar Steam Plant and area of half million population. 209 Empire Huilding, Knoxville, Tennessee.

WANTED

ANYTHING within reason that is wanted in the field served by Coal Age can be quickly located through bringing it to the attention of thousands of men whose interest is assured be-cause this is the business paper they read.

ELECTRIC STRIPPING SHOVEL FOR SALE

Bucyrus 200-B equipped with crawlers and 10 yd. dipper for loading coal. Good con-dition, will make excellent 5 yd. stripping

FOLEY BROTHERS, INC. Colstrip, Mont.

FOR SALE THE SALE
stre equipment of coal mine located at El
and. Kentucky consisting of:
200 KW Sub-stations, Mining Machines,
Lacomotives, Prop Bottom Mine Cars, Copper, Steel, Fans and all other necessary
aversories.

PIONEER COAL COMPANY Kettle Island, Bell County, Kentuck

FORSALE

13—Type 2770 1 b, Goodman Permissible Power Buch Bills with Power Take-Offs, 239 Voit D.C. Used that time. — New T.2 6 Joy Caterpillar Mining Machine Truck, 250 Voit, D.C. Oschol 315-PG-60, Two Biage, Africance Procuments Red of the Proceedings of the First with Electric Starter In good condition. Hutchinson Coal Company, Fairmont, W. Virginia

1—10 ton Jeffrey, 200 V. Lecomotive, Serial 5199.
Inside Wheels, 207 Gales, or 100 th. Relay rails Approx. 30 tons (711 Yda.) of 50 th. Relay rails (Cambria Steel). (31 Yda.) of 55 lb. Relay rails (Cambria Steel). (31 Replayfield 22 mino (formerly Liccoln) Nanty Gig. F., Fer further details write to: LINCOLN COAL COMPANY UT Battery Place

For Sale at

PUBLIC AUCTION TUESDAY, MAY 10, 1949

By Order of the United States District Court for the Northern District of Illinois, Eastern Division.

- COAL MINING MACHINERY & EQUIPMENT
- LAND AND IMPROVEMENTS
- LEASEHOLDS AND GOOD WILL of the

INDIAN HEAD MINING CORPORATION BANKRUPT

HORTON, KENTUCKY

TO BE SOLD TO THE HIGHEST BIDDER OR BIDDERS FOR CASH!

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67 acre tract adjoining the Illinois Central R.R. at Horton (Ohio County), Kentucky, improved with an 85 foot modern all steel, welded construction, fully equipped coal tipple and 2 track loading arrangement for approximately 34 coal cars; partially built concrete block mine office, parts warehouse and wash room building; powder storage magazines; all steel quonset shop bldg., etc.

MACHINERY & EQUIPMENT:

Manitowoc "Speedway" Dragline with 126' boom; Lorraine Caterpillar Tread Loading Shovel; 2 Allis-Chalmers HD-19 tractors with cable operated buildozers; International TD-18 tractor with Hydraulic Dozer; Electric Generators; Ingersoll-Rand 10's. ft. compressor; 135 H.P. Murphy Diesel Power Plant; Tandem Sheep-Poot Rollers; and many other items. Also a large inventory of replacement parts, small tools, electrical supplies, structural steel and steel shafting, implements, fittings, etc.

AUTO TRUCKS:

1948 GMC 1½ ton and ¾ ton flat bed trucks; 1947 Federal 2½ ton flat bed; 1947 Fords 1½ ton flat bed, ¾ ton pick-up and club-coupe; 1948 Ford pick-up; 1948 Willys jeep; 1942 White 10 ton with winch and stiff leg.

LEASEHOLDS & GOOD WILL:

We will also offer for sale the Truste's right, title and interest in and to leancholds for approximately 5,000 acres in the imme-diate area of operations, list of customers,

For Illustrated Descriptive Circular WRITE - WIRE - PHONE

SAMUEL L. WINTERNITZ & CO.

Auctioneers e Liquidators e Appraisers

FIRST NATIONAL BANK BLDG.

INDIANAPOLIS - DETROIT

CHICAGO 3, ILL.

IMMEDIATELY AVAILABLE-MINING EQUIPMENT

MINING MACHINES

Jeffrey: 2-35B 250 volt D.C. and one 35BB, 220 volt 3 phase A.C. 28A, 250 V, 1-24B Low Vein 4-39B, 39C, 39CE with shearing head. Also 1 volt 2 phase A.C. 22A, 229 V. 1—24B Low Von 4—295. 27C. 27CE with hearing head Also 1 on cat. Resulting head for 22C. 2—Longwall 24B, Goodman 12A, 173B, 173A, 170BA, herveralls. 1—18 Litch Cutter for Cross Bead timbers, 1—124 EJ Slabbing Machine, permissible Upe, 202 and 509 volts. Sulfress: Cr.C. CD, 220 volt D.C. and 3 phase A.C.

SUBSTATIONS-275 volts, D. C.

LOCOMOTIVES

codman; All 250 volts. 1-4 tem, 30 B 48°, 1-5 ten, 2000 R. 1-5 ten, 5-30 30° gauge. 1-6 ten, type 5A. restinghouse Units: All 250 volts. 804, 192, 804 and 115. Bar steel frames, 6 ten, and 4 ten.

Bart steel frames to but | 1-001 for cause | 1-001 for cause | 6.E. All 130 rolls | 6.E. All 130 rolls | 6.E. All 130 rolls | 1-001 for cause | 1-001 for ca

with 3-6 ton lacomotives, 250 volt. 5 ton 825, 44" and 36". Dismantléd. 2 motors for 8 ton 875.

LOCOMOTIVES

leftrey: 2-6 ton MHSS. 1-4 ton MH12. 1-10 ton MH-7E. 8 ton type MH 73, 230 volts. Re-built Locopolive motors and Crabs and Reels for

Leconomities.
Irontee, 5 ton, 30 to 48" gauge.
Field Frames: 4—Jeffrey MH-88 new, MH-73, MH-78. WestImphouse 102, 115 and 902, General Electric HM-839, 819, 703, 825, Goodman 22-A.
15 ton and others. 15 ton and others. scemative Frames: Goodman 8 ton type 32, Jeffrey 6 ton MH-88, 10 ton MH-78, 8 ton MH-100, 4 ton MH-96.

SPARE ARMATURES

Jeffray: Milles, Mille

OTHER ITEMS AVAILABLE

Arrial Transays.

Belt Conveyors: I Bushet Elevator Conveyor.

Belt Conveyors: Z Bushes.

Belt Conveyors: Z Bushes.

Bushes.

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Circuit Breakers: Actomatic: 250 & 550 volt.

Circuit Breakers: Actomatic: 250 & 550 volt.

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Circuit Breakers. Manual: 600 amps. to 3.000 amps. Coaf Crushers: (double roll) 18"x20", roll: 24"x24", 30"x30", 1-30" Williams #3 Coal Crusher,

Conveyors: Scraper type. Apron and grate bar acreening type. Screens: 1 shaker 3 track, feeder reciprocating and apron pan type. Agron pan Upe.

mpresers & Jackhammers, Compensators.

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literating head for 29C.

Dumps; OTHER ITEMS AVAILABLE

OTHER HEMS AVAILABLE
Generators: DC 250-275 volt. 30 KW to 125 KW.
1—AC Generator, 31.3 KVA, 3 ph. 208 volt. General Electic with Exciter.
Hoists, overhead: AC 3-00-409-220, 1 non and 2 ton.
Crabs and Recum Boists. Also single and double

Lathes: Miscellaneous and machine tools, Loading Machines: 2-Myers-Whaley #3 and 4.

1-12BU Joy loading machine. Milling Machines: horizontal and vertical. Mining Machines Trucks and 2 on Catts. for short-

Switzers.

States and Controllers: AC and DC.
Synchronous Motor Starters, full magnetic, across
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1-100 H.P. 250 voit D. C. 1-165 H.P., 440

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500 KW G.E. SYN. 575 V. 900 RPM, 2300/ 4000 V. 3 P. 60 C. SWITCHGEAR.

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300 KW RDWY. SYN. 275 V. 1200 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR. 200 KW G.E. SYN. 275 V. 900 RPM, 2300/

4000 V 3 P. 60 C. SWITCHGEAR. 150 KW G.E. SYN 275 V 1200 RPM, 2300/ 4000 V. 3 P. 60 C. SWITCHGEAR.

SYNCH. CONVERTER

300 KW G.E. 575 V. Type HCC. 6 P. 60 C. 1200 RPM, Padestal Type. 2300/4000/ 6900/13,200 V. Trans. & Switchgear.

LOCOMOTIVES

30-T Jeffrey 250 V.MH-77 Mts. 48"-36" Ga. 20-T Joffrey 250 V.MH-77 Mts. 48"-36" Ga. 13-T Jeffrey 250 V.MH-110 Mts. 42"-32" Ga. 13-T G.E. 250 V.HM-827 Mts. 44"-36" Ga. 10-T Joffrey 250 V.MH-110 Mts. 44"-36" Ga. 8-T G.E. 250 V.HM-839 Mts. 44"-36" Ga. 8-T West 250 V. 906-C Mts. 44"-36" Ge. 6-T West, 250 V. 903-B Mts. 32"-22" Ga.

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- 9 ton Westghs. 36" ga. battery type locomotives, new 1945.
- 45 ton Davenport diesel electric loco-motive, new 1942.
- 80 ton Lima steam switching locomo-tive, new 1944.

11/2 yd. Lima 701 diesel dragline, new 1942.

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3-500 KVA A-Ch 33000-2200 3-500 KVA G-E 2400-240/480 1-400 KVA G-E 13200-120/240 2-322 KVA G.F. 12866-120/246 1-250 KVA G-E 6900/11950Y-220/460 2-250 KVA W-H 2400-120/240 4-150 KVA G-E 22000-2300/4000Y 3-150 KVA Wag 2300-230/460 150 KVA G.E. 2300/4000V-230/115 3-100 KVA Pitts 22000-2300 - 100 KVA G-E 11000-2300/4000Y 1-100 KVA G.E. 12200-2100 - 50 KVA G-E 33000-2400/4160Y 50 KVA Pitts 26400-2300/4000Y -37 k KVA W-H 13200 120/210 5 KVA G-E 2300-115/230 10-15 KVA Wag 7200-120/240 REA-

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- 3-D-13000 Caterpillar Diesel Generators, 75 KW, 440 Volts, A.C.
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4-Connellsville Larry Cars, Trolley Operated, 6 Ton Capacity.

150-Card Iron Works R.B. Pit Cars, 36" Gauge, 1-Card Iron Works Rock Car, 90 Cu. Ft. Capacity.

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1-3' x 6' Single Surface Tyler-Niagara, V-belted to 5 HP. AC Motor. 1-3' x 6' Single Deck Plat-O, Flat Belt Drive to 2 HP.

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- NGERSOLL-RAND MOTOR MOUNTE 2-2RV-1-100 GPM, 25' Head. 1-ORVF-1-20 GPM, 50' Head. 3-RV-3-120 GPM, 55' Head. 1-RVH-7½-150 GPM, 120' Head. 1-1½RVH-10-125 GPM, 200' Head. 4-2RVH-15-200 GPM, 180' Head. 1-3RVH-25-400 GPM, 180' Head.

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- 1-24" Conveyor, 56" Centers, equipped with 18" dia. x 26" face Ding's Magnetic Pulley, with charger. Unit driven by 1 HP 3 ph. 60 cy. Gen. Elec. Gear Motor. 2-24"x26" Ding's Magnetic Pulleys, 230 volts DC, with-
- out chargers.

FLIGHT CONVEYORS

- 1-8" Flight Conveyor-65' Long. 1-10" Flight Conveyor-30' Long. 2-24" Flight Conveyors-50' Long. 1-24" Flight Conveyor-85' Long.
- 30" Flight Conveyor-150' Long.

BELT CONVEYORS

- 1-24", 15' Long, with Ding's Pulley.
 1-30", 30' Long, with 2 H.P. Gearhead Motor. New belt.
- 1-30", 70' Long, with driving mechanism.

Sullivan CE-7 AC Short Wall, complete with Tip-turn Truck and Reel. New CE-7 Cutting Machine Parts.

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 1-12' x 10' Steel Hopper Bin,
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1—No. 22 Vulcan, with Man Cage, 30' Steel Headframe and 40 HP. Single Speed Elevator Type Motor, equipped with Solenoid Brake (Hoist purchased new in 1942). -Single Drum Gasoline Hoist, direct connected to 2%

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x 41/4 Wisc, Gas Engine.

2-71/2 Ton Goodmans, 36" Gauge, 250 Volt DC.

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- 1-Sullivan #1W-6, with drifter, on steel wheels. AC Motor.

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1-8% x 4% x 5 Pneumatic, 277 cu. ft. displacement. V-belted to a D-4400 Caterpillar Diesel Engine-Semiportable.

1-8-H60 Jeffrey Aerodyne Exhausting Fan, with 75 HP. Motor-Purchased new in 1942.

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- MOTORS—AC

 16—¼ HP. New Leland Single Phase Motors.
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 2—1½ HP. New Leland Single Phase Motors.
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 3—10 HP. Used G.E. 3 Phase Motors.
 2—25 HP. Used G.E. 3 Phase Motors.
 2—36 HP. Used G.E. 3 Phase Motors.
 3—35 HP. Used G.E. 3 Phase Motors.
 3—35 HP. Used G.E. 3 Phase Motors.
 1—40 HP. Used G.E. 3 Phase Motors.
 1—50 HP. Used G.E. 3 Phase Motors.
 1—50 HP. Used G.E. 3 Phase Motor.
 1—50 HP. Used G.E. 3 Phase Motor.
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			CAGE MOTO	RS	TRANSFORMERS (0.1.8.C.)
	H.P. 400 400 300 250 250 260 150 150 150 150 125 125	Make G E. G E. Al. Ch. Whoe. Whoe. Al. Ch. El Mehy. Whoe. G E. Cr. Wh. Whoe. Whoe. Whoe. Whoe. Whoe. Whoe. Whoe. Whoe. Whoe.	KT 412 KT 413 AB CB CB AB IC CS-772 CS-772 I K	100 100	Ga. KVA Make Type Passe 4 506 5 606 6 G. K. H. 1 13206/11805-226/410 2 506 6 G. K. H. 1 2306/11805-226/410 2 506 6 G. K. H. 1 2306/11805-226/610 2 506 6 G. K. H. 1 2006/1180/2206 2 506 6 G. K. H. 1 400-129/240 2 506 6 G. K. H. 1 2006-2200 2 507 6 G. K. H. 1 2006-2200 2 507 6 G. K. H. 1 2006-2200 2 507 6 G. K. H. 1 2006-220 2 507 6 G. K. H. 1 100/2206-058 2 507 6 G. K. H. 1 100/2206-058 2 507 6 G. K. H. 1 2006/1100-240 2 507 6 G. K. H. 1 2006/1100-240 2 507 6 G. K. H. 1 2006/1100-240 2 508 6 G. K. H. 1 2006/1100-240 6 G. K.
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2—112AA Goodman Universal, D. C. 4—112G3A Goodman Universal, 220 V., A.C. 2—112G3 Goodman Universal, 220 V., A.C. 1—12AB Goodman Universal, D.C., Permisible

Type. 3-358 Jeffries Machines, 250 V., D.C. 6-CE7 Sullivan Machines, A.C.-D.C. 1-78 Sullivan Machine, 250 V, D.C.

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2—6 Ton Goodman type 31 Bail Bearing.

1—8 Ton Goodman type 21 Bail Bearing.

2—5 Ton Goodman type 22 Bail Bearing.

1—6 Ton G.E. type 92 Inch Gauge.

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1-125 KW-250 volt, D.C. Direct Connected Generator Set consist-ing of 180-HP. Fairbanks-Morse 3 cylinder, Style VA Stationary Diesel and Westinghouse 230 RPM Generator

3

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All complete, in good operating condition and priced for quick sale. Your inquiry and inspection invited.

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-18"x18" McNally Pittaburg Double Roll Crusher. -18"x18" Link Belt Double Roll Crusher. -30"x30" Jeffrey Single Roll Crusher. -36"x36" Link Bett Double Roll Crusher.

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-Wellman Engineering Company, single drum helist, 10° in diameter, T face, 1-3/10° between pasks, 51° fangs, 1,5° rope, 87° per minute. Complete with a 469 HP Westinghouse motor, 2,50° votal, sphase, 66 rept. 250 HPM, type HP, and GES an-tomatic control. MELIZE for mine holst services, 2,50° votal, 400 HP.

2.700 roits, 400 HP.

—Ottumes Iros Works, single rigid cylindro-comical
drum holst, serial 74680, weight 43,000 lbs, 1%*
rope, complete with remote control and hardsaule
brakes direct connected to Western Electric 150
HP. motor model 176.5.70 to voice, silp rins,
secondary rolts 388, amps. 187, secondary amps.
182. speed full host 700, sorial 746.50312, continuous 40° C. Complete with controller and reChitumes Heat 1822.

sistance.

-Ottomwa Hoist 2561, drum diameter 68°, face 26°, face growed for 1° rope, equipped with post brake 54° diameter, hand operated, single reduction cut spur gasrs. 19 teeth and 196 feeth, 1½° plich, 16° face, drum shaft 1° diameter, drum shaft bearing 7°x16°, pinton shaft hearing 4½°x12° of the ring 61° fine; trpe, direct connected to 103 HF. Westinghouse motor, type CW, 220 rolts, 3 phase, 66 crefe, 360 8 amp., 308 HFM, 2209453.

LOCOMOTIVES

1-6 ten Jeffrey locomotive, 42" gauge, 1-13 ten Goodman ball bearing locomotive, 42" gauge, 2-13 ten Westinghouse ball bearing locomotives, 42"

gauge. 1-6 ton Jeffrey locomotive, 42° gauge.

RAILS

Carload lets new 12 lb., 16 lb., 26 lb., 25 lb. and 20 lb. raffs. Price and delivery information upon request.

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1-Goodman Universal Mining Machine, 112AA, DC, 61/2 cutter bar,

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1-Jeffrey Shortwall Mining Machine, 35 BB, AC, 6' cutter bar complete with tip turn truck, cable and reel.

1-Sullivan Shearing Machine, Class CE11, DC, 9' cutter bar,

2-Sullivan Longwall Mining Machines, type CHS, 3/60/220 volts, 30° cutter have

MOTOR GENERATOR SETS

50 KW Westinghouse motor generator set, DC and 250 volts, 200 amps, 211, Upc S. Seld serial 250 volts, 200 amps, 211, Upc S. Seld serial compound wound. AC end 75 HP westing the induction motor, Upc CS, 3 phase, 60 cycle, 2,200 volts, 18.1 amps, pet terminal, 40° C temp. rise, Rio upo, 24564185, complete with switchboard for DC end and compensator for AC and.

56 KW General Electric motor generator set. 254054, type BR, form C, LS, 350010-39, 200 amps, 250 volts, 1740 BPM, cond, 30°C, direct connected to 75 HP General Electric Induction motor, type KT3374-475-1800 Form B, 3 phase, 60 crcle, 220 volts, 174 amps, 1730 rpm, 26323202, cont. 40°C, complete with manual artichloard and compensator.

100 KW Diesel generator set, 250 volts DC, complete with switchboard

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 Little Giant AC electric coal drill size 473. S
phase. 66 cycle, 220 volts, type IPF, serial #143533.
 Dooley Electric drills, AC, 220 volts, new type. 2-Dooley Electric DC drills, #472.

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1-3'x7' Single deck vibrator.

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DC.
Converter GE 600v.
DC. fully automatic, remote control.

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300 KW G.E. Rosay 273 v. with 3-110 KVA 22004/
300 KW G.E. Rosay 273 v. with 3-110 KVA 22004/
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230 KW West, 257 v.—253 HF 10.3 2200 v. Syrs.
230 KW West, 275 v.—253 HF 10.3 2200 v. 400/220 v.
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230 KW West, 123 v.—150 HF 10.3 2200/440/220 v.
230 KW West, 123 v.—150 HF 10.3 2200/440/220 v.
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200 HP, West. CW 2300/3/60 600 RPM S.R. 300 HP, G.E. I M 2300/3/60 450 RPM S. R. 150 HP G.E. KT 220/440 - 855 RPM S.R. 200 HP, G.E. IM 220/440 - 855 RPM S.R. 200 HP, G.E. IM 229/469—685 EFPM 6.R. 150 MF, G. K. flyn. 229/469/23/60 600 KPM 100 HF, G.E. IM 160/229/35/66 600 KPM 100 HF, G.E. IM 460/229/35/66 600 KPM 8.R. 110 KW Triumph 250 v. 600 BFPM Gen. 120 KW GEL 530 v. RC 1158 RPM Gen. 225 KW West. SE 250 v., 600 KFM Gen.

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3-250 KVA G.E. Type H-KS 2300/4000-220/ 440 t. 2-100 KVA All. Ch. 2200 t.-220 t.

LOCOMOTIVES Maulage and Gathering

20 25 Ton G.E. outside 4" armorplate frame, steel tires, 3HM. 824 88 Meter, (23 HP. each, 508 v., 42 or 44" Ga.

15 ton Jeff. MHI10 Std. R.R. Gauge.
13 Ton West. 36 or 40° Ga., 230 v.
13 Ton West. 36 or 40° Ga., 230 v.
10 Ton Jeff. 250 v. 30/42° Ga. MH 110 Motors.
8 Ton Goodman 30e v. 42′44° Ga.
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6 Ton Jeff. 250 v. MH 38 Gath. 42° Ga.
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5-5 Ton Goodman 30° b. 250° v. 42° Ga. Gath.
2-4 Ton Goodman 30° b. 25° Ga., sgi. motor, gath.

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6 Ton G.E. Permissible BB Motors, 36/44" Ga. 51/2 Ton Ironton Type A 36/42 Ga.

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2-112 EJ Goodman Universal, 230 v., 716' bars, 2-12 DA Goodman 250 v. DC 616 to 716' bars, 2-35 B Jeffrey, 250 v., 616 to 716' bars.

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300 HP Lidgorwood sgl. fixed drom, 61/2' dla. 3' face. 5' flanges grooves—11/2' sable, 300 HP 2300/4000/3/60 Westgh. CW.

75 HP Diamond fr. 48" dia. 25" face, sgl. 75 HP Mead Morrison sgl. fr. drum—AC Mater. 1—50/75 HP 2 drum Meade Morrison slope. 50 HP Heyl & Patterson sgl. fixed drum, 4" dla.

PROMPT SHIPMENT ON ALL SIZES A. C. AND D. C. REBUILT MOTORS.

MOORHEAD ELECTRICAL MACHINERY CO. Mayflower 7900

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1500 KW complete.

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I-Single Drum 60" dia., 42" face, 200 H.P., G.E. Motor, 3 phase, 60 cycle, 22"0 volt, com-plete with control equipment. I-Double drum 38" dia., 42" face, 7/4" rope, 300 FPM, ISO H.P., 440 volt motor.

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bits NEW PUMP: 500 H.P., 6 stage, 600 GPM, 1000 PSI, 220, 440 volt.

PULYERIZER Hardinge Conical Ball Mill 6'x22", manganese steel lined, Harringbone gears, with motor and V-belt drive.

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11/2 to 10 Ton 13" to 56" Track Gaug

GREENSBURG MACHINE CO. Greensburg, Pa.

Jeffrey 30 x 34 double roll crusher 82A Harber-Greene Bucket Loader 445 Barber-Greene Bucket Loader 50 HP Shaft Hoist 8 yd. Byers Crane 8 yd. Byers Crane

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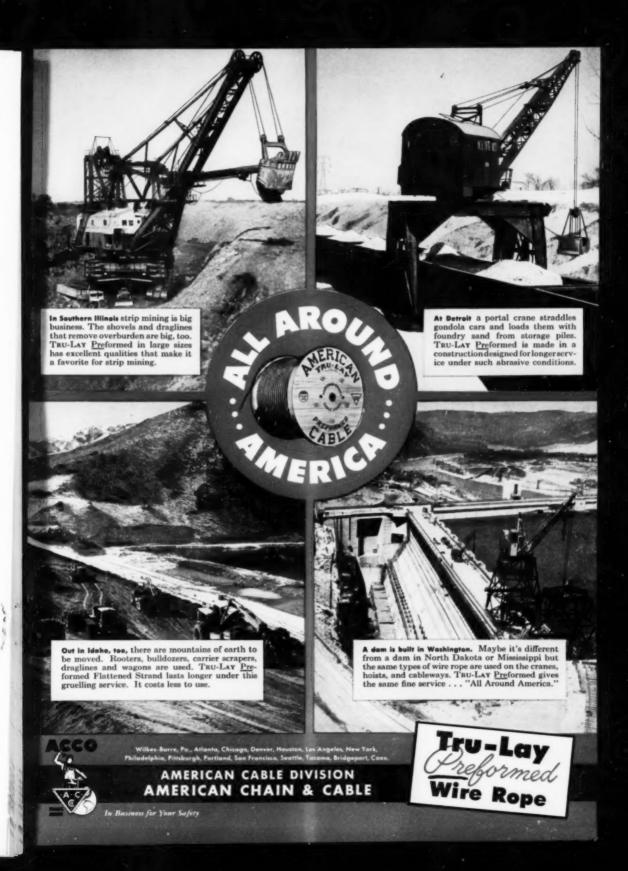
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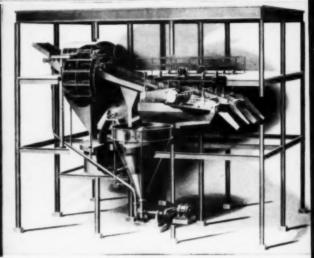
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